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TRANSLATION

Number 81 — 27 Jun 1947

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REAR PREPARATIONS OF THE RED ARMY IN EASTERN USSR

Prepared By

Documents Branch

CENTRAL INTELLIGENCE GROUP

New War Department Building
21st and Virginia Avenue, N. W.
Washington, D. C.

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SUMMARY OF CONTENTS

Rear Preparations of the Red Army in Eastern USSR
(Doc No 220664)

This is a complete translation of a comprehensive study of the rear preparations of the Red Army in Eastern USSR made by Japanese General Headquarters in early 1945. "Rear preparations" as used in this document is extended to include "every phase of preparations for military operations."

The scope of this study covers surveys of Eastern USSR's materiel self-sufficiency, transport capabilities, degree of dependence upon outside aid (including a discussion of lend-lease from the US), and wartime requirements. A short concluding section estimates the military strength that Eastern USSR could employ against Japan, based upon the supply transportation capacity to Eastern USSR.

The appendix to this study, referred to in this translation is not included in this publication. It was translated by SCAP in Japan and is, however, available for reference in Documents Branch.

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Pages 1 through 115

SECRET

COMPLETE TRANSLATION

DOC NO 220664

REAR PREPARATIONS OF THE RED ARMY IN EASTERN USSR

Army Department
General Headquarters
1 April 1945

TABLE OF CONTENTS

EDITOR'S NOTE: Proper names appearing in capital letters followed by an asterisk are transliterations from the original Japanese.

PREFACE

A. Definition and Significance of "Rear Preparations"

The term "rear preparations" as used herein refers to every phase of preparations for military operations. It therefore includes accumulated stores of munitions, munitions production capacity, essential raw materials, and, of course, manpower, pack animals, and vehicles, as well as communication and transportation facilities. These factors, together with rear supply and transportation capacity, are what is meant, in a broad sense, by "rear preparations." This study is not concerned with the fact that the principal decisions of the Red Army in Eastern USSR on rear preparations were motivated by the Red Army's anti-Japanese operational plans and the Japanese anti-Soviet military potential.

B. Importance of Studying the Rear Preparations of the Red Army in Eastern USSR

Since, in modern warfare supply is as important as combat, it is no exaggeration to say that superiority or inferiority in rear military strength can decide the outcome of the war. Consequently, an accurate study of the actual state of rear preparations in Eastern USSR will make possible an evaluation of the operational plans and capabilities of the Red Army. Therein lies the importance of this volume.

C. Notable Features of the Rear Preparations of the Red Army in the Eastern USSR

1. Typical Red Army Battle Tactics

One characteristic of the Red Army's battle tactics is its employment of overwhelming forces to overpower and annihilate the enemy. Recent years have seen remarkable increases, all based upon the vast manpower and materiel resources, in the military preparations of the Red Army, particularly in their air, their mechanized, and their artillery forces. The amount of materiel required by an operational force in wartime has reached enormous proportions, and the operational effectiveness of a unit is directly determined by the standard of its supply and transportation services.

2. Geographic Weaknesses in the Defense of Eastern USSR

Eastern USSR lacks self-sufficiency of man-power and materiel; its munitions industry is especially weak. The communication facilities and industrial resources of the Eastern USSR are concentrated in an area close to the border, which lacks strategic depth. Far removed from Central European Russia, which will serve in wartime as the principal source of military supplies, it has only the Trans-Siberian Railway as its main supply route.

3. Scale of Operations against Japan

The USSR has considered the personnel and materiel resources of Eastern USSR, its own inability to supply Eastern USSR, and the strength of the Japanese forces which could be used against it.

Consequently, the USSR has decided that in a war against Japan the employment of such large forces as those used in the Russo-German war would be not only extremely difficult but also unnecessary. Moreover, there are natural limitations upon the forces which could be used against Japan, and it is readily understood that any such operations would be carried on a greatly reduced scale compared with those of the Russo-German conflict.

D. Essentials to be Considered in Examination of the Rear Preparations of the Red Army in Eastern USSR (Cf Diagram No 1, 'Diagrammatic Survey of Rear Preparations')

This survey of the rear preparations of the Red Army in Eastern USSR will have as its main objectives the calculation of the degree of self-sufficiency of Eastern USSR in man-power and materiel and the supply and transportation capacity of the USSR Proper with regard to Eastern USSR. We shall thereby obtain an evaluation of the operational plans and the scale of operations of which the USSR is capable in the event of a war against Japan.

1. Estimate of Wartime Requirements

A calculation of the wartime requirements is a prerequisite for surveying the rear-preparations of the Red Army in Eastern USSR, especially its man-power and materiel self-sufficiency and the ability of the USSR to supply Eastern USSR. However, wartime requirements will also be greatly affected by the respective operational strength of the USSR and Japan, the nature and time of the operations, their duration, and conditions in the theater of operations. Consequently, in the following study, certain basic facts have been assumed and calculations made from them. Moreover, it is believed that in the event of war, although civilian needs may differ in some respects from present ones, the general situation will be little changed.

2. Manpower and Materiel Self-sufficiency of Eastern USSR

A consideration of the wartime self-sufficiency of Eastern USSR from the standpoint of manpower and materiel is vitally important in calculating both the wartime requirements of the region and the ability of the USSR to supply Eastern USSR.

In considering self-sufficiency, we must not only investigate the question of productive capacity and the amount of supplies which can be requisitioned locally but also the amount of stores accumulated. This is quite obvious from the special nature of Eastern USSR. Unfortunately, there is very little information available on the amount of accumulated stores in Eastern USSR, and it is very difficult to make an estimate. Much will depend upon future investigations. Production, besides being affected by climatic and other factors, will naturally be subject, in wartime, to other influences. Nevertheless, in this study, the volume of production is based on the figures for the present year. (Statistics for agriculture and fishing are those for an average wartime year). Furthermore, the supplies acquired in Eastern USSR will have a considerable effect upon the volume of goods available as supplies. However, these factors will be greatly affected by the nature of the operations.

Consequently, in this study, we have ignored those supplies which are naturally available in Eastern USSR and have, for the most part, assumed that Eastern USSR will be dependent upon supplies from the USSR Proper.

3. Ability of the USSR to Supply Eastern USSR (Transportation Capacity)

If we accept the proposition that, in wartime, Eastern USSR will be dependent upon Central European USSR for supplies, the next problem is the ability of the USSR to carry on a war and the amount of lend-lease available. This problem may be further subdivided into the questions of what constitutes the ability to prosecute a war and the questions of supply and transportation. The former bears no important relation to the scale of operations against Japan. For the latter, the least that can be said is that the Trans-Siberian Railway, serving as the main wartime supply artery, will greatly hamper the operational effectiveness of the USSR against Japan.

NOTES: (i) The value of Outer Mongolia to rear preparations is worthy of intensive study, but because of the lack of information, it has been relegated to the appendix. Consequently, the information given should itself be amplified by further study. Some essential items have, however, been included in this study.

(ii) The organization and management of the Red Army's rear preparations are important aspects of such a study, but because of the lack of information, these points will have to await further research.

(iii) The following may serve as reference material for detailed study:

(a) Report on Storage Facilities in Eastern USSR and Outer Mongolia (Prepared by Army General Staff Headquarters)

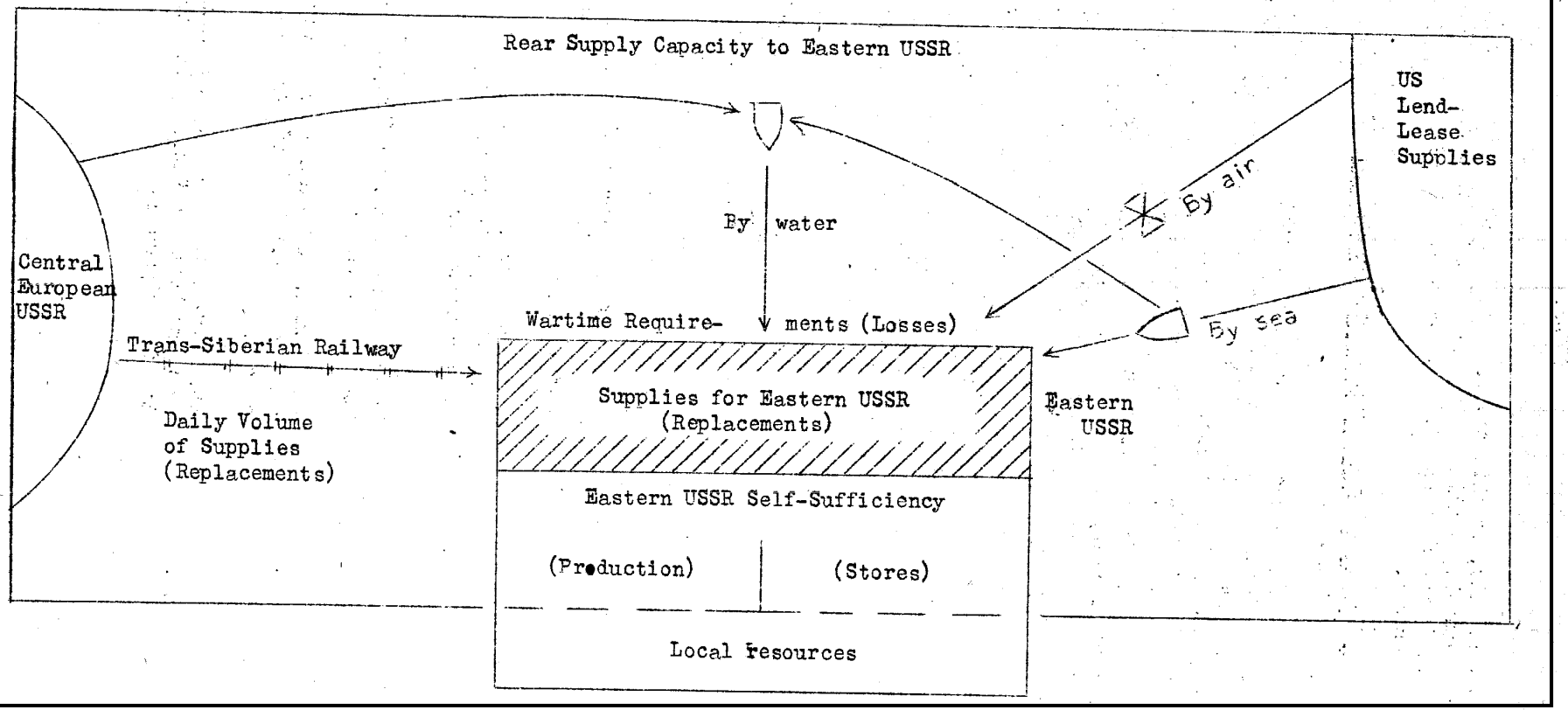
(b) Report on Factories and Industries in Eastern USSR and Outer Mongolia (Prepared by Army General Staff Headquarters)

(c) Evaluation of Transportation Capacity of the Trans-Siberian Railway (Prepared by Army General Staff Headquarters)

(d) Summary of a Report on River and Sea Transport in Eastern USSR (Prepared by Imperial Headquarters)

(e) Survey of US - USSR Air Communication Routes over the Northern Pacific (Prepared by Army General Staff Headquarters)

MAP 1. DIAGRAMMATIC SURVEY OF REAR PREPARATIONS



NOTES:

1. Maximum and Minimum Daily Volume of Supplies
   a. Provisions and fodder
   b. Fuel
   c. Ammunition
   d. Other supplies
2. Replacements for Losses sustained by Personnel, Horses, and Vehicles
3. Wartime Requirements
   a. Operational strength; General Operational situation
   b. Duration and time of operation
   c. Conditions in the theater of operations
4. Supplies (Replacements) for Eastern USSR
   a. Self-sufficiency of Eastern USSR in manpower and materiel
   b. Operational preparations prior to the outbreak of hostilities, particularly the volume of munitions sent forward, accumulated, and stored.
   c. Local resources

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Part 1. OUTLINE

I. CURRENT CONDITIONS IN EASTERN USSR FROM THE STANDPOINT OF REAR PREPARATIONS

(Cf Table 1, "Troop, Horse, and Vehicle Replacement Capacity and Materiel Supply Capacity of Eastern USSR," Table 2, "Manpower and Materiel Self-sufficiency of Eastern USSR during the First Year of War," and Map 2, "Distribution of Essential Industries and Principal Resources of Eastern USSR.")

A. Ability to Replace Men, Animals, and Vehicles

1. Approximately 140,000 men and 100,000 horses are available in Eastern USSR. (This includes 50,000 men liable to conscription.) When potential wartime losses are considered, these numbers are quite insignificant, especially the number of men available.

2. The various types of vehicles available include 18,000 tractors, 128,000 oxen and horse-drawn vehicles, and about 63,000 sleds. Large numbers of vehicles , especially trucks, will have to be brought in from Central European USSR.

B. Self-sufficiency in Essential Provisions and Materiel

1. Bread Grain

The average annual crop is about 930,000 metric tons, which is no more than approximately 67% of the amount necessary for self-sufficiency at present. Therefore, if we assume that 860,000 metric tons are available as a wartime supply and that an additional 250,000 metric tons are available in the storage depots of Eastern USSR, the supply capacity of the Eastern USSR in the first year of war would be 1,110,000 metric tons. Thus, in order to meet the demands of war, an enormous volume of supplies would have to be shipped from Central European USSR or from abroad.

2. Coal

The actual amount available in the Eastern USSR is approximately 13,000,000 metric tons. At present, this appears to constitute a surplus. However, in wartime, with the demands on transportation increasing, the amount of coal consumed by the railroads will increase greatly, and the total demand will climb to 18,000,000 metric tons. Although an increased wartime production of 14,500,000 metric tons is possible, even when this has been added to Eastern USSR's stored reserve of 3,000,000 metric tons, the actual supply will not be sufficient to meet the demand. Supplies from Central European USSR will therefore be necessary.

3. Petroleum

The annual petroleum production of Eastern USSR is approximately 650,000 metric tons, which is only 66% of the amount required for self-sufficiency at present. Even when this has been added to the stored reserve of 1,300,000 metric tons, Eastern USSR's capacity to produce and supply petroleum during the first year of war amounts to only 1,950,000 metric tons. In view of the vast wartime demands, this will necessitate the supplementation of supplies either from Central European USSR or from abroad.

4. Steel

The annual steel production of Eastern USSR is only about 220,000 metric tons, which is about 38% of the amount necessary for self-sufficiency at present. During wartime, railroad construction, repair work, and other factors will create sudden increases in demand. Consequently, even when the stored reserve of 200,000 metric tons has been added, it can be assumed that considerable supplies will be required from Central European USSR.

C. Capacity of Munitions Industry

Eastern USSR's munitions industries can produce approximately 400 aircraft, 150 tanks, and 550 artillery pieces per month. Even if this rate of production were maintained and the stored reserves were made available, considering the losses incurred in modern warfare, the capacity of the munitions industry is too small for self-sufficiency. Moreover since the production of munitions is low, supplementation of supplies of ordnance equipment and ammunition from Central European USSR and from abroad will be on a large scale in wartime. This will be particularly true of those weapons and equipment whose rate of production is especially low.

D. Accumulated and Stored Supplies of Munitions

Although these did not appear to be large from observation of storage installations, it is estimated that the reserve of provisions and fodder amounts to approximately 800,000 metric tons, the reserve of liquid fuels to 1,300,000 metric tons, and the reserve of ammunition to 200,000 metric tons.

E. Lend-Lease to the USSR via Eastern USSR Ports

The annual imports of lend-lease supplies from the US via Eastern USSR ports amount to approximately 1,700,000 metric tons. This figure could be increased in wartime, thereby greatly increasing the fighting potential of the Red Army in Eastern USSR.

F. Freight Transportation Capacity

Although the transportation capacity of the various routes, available in wartime as lines of supply to Eastern USSR varies according to circumstances, the following is an outline of the annual maximum capacity:

Method of Transportation	Freight Transportation Capacity (metric tons)	Percentage of Total
Trans-Siberian Railroad	About 13,000,000	About 82%
River (Sea) Transportation	About 2,500,000	About 16%
Air Transportation	About 100,000 to 260,000	About 2%
Total	15,700,000	100%

NOTE: The transportation capacity of the Trans-Siberian Railway for military materiel during the current year was approximately 9,300,000 metric tons.

G. Weakness and Strength of Eastern USSR

The weakness and strength of Eastern USSR from the standpoint of rear preparations can be outlined as follows:

1. Weakness

a. Sparsity of population and basically unstable economic structure.

b. Distribution of population and lack of strategic depth, resulting from the location of the main production belt and the munitions storage installations.

c. Weakness of the internal communications of Eastern USSR and the deceptive weakness of the transportation supply routes to Eastern USSR.

d. Lack of completion of rear preparations along the western Manchurian front from the standpoint of offensive operations.

e. Weakness of the Red Army in Eastern USSR in regard to operational strength and ability to replace vehicles.

2. Strength

a. Increase in fighting strength as a result of US lend-lease supplies to the USSR.

b. Increase in the rear supply capacity by utilization of the US-USSR northern air routes.

c. Establishment of rear installations on a wartime basis.

Table 1 TROOP, HORSE AND VEHICLE REPLACEMENT CAPACITY AND MATERIEL SUPPLY CAPACITY OF EASTERN USSR

			Total Number*	Amount of Replacements*	Remarks
Replacement Capacity for Troops, Horses and Vehicles	Men		6,050,000	140,000	1. The population of the Eastern USSR includes approximately 700,000 troops, with 360,000 men in military camps. 2. Includes 50,000 available recruits who had reached 16 years of age in 1945. 3. In addition approximately 200,000 men may be conscripted from Outer Mongolia for use as laborers.
	Horses		430,000	100,000	It is possible to requisition approximately 280,000 horses, 110,000 oxen and 80,000 camels from Outer Mongolia.
	Vehicles	Trucks	16,000		1. Replacement tractors are tracked. 2. Approximately 100,000 oxen and horse carts can be requisitioned from Outer Mongolia.
		Tractors	11,000	1,800	
		Local Transportation Equipment — Horse drawn vehicles	256,000	128,000	
		Local Transportation Equipment — Sledges	128,000	63,000	

*These are approximate figures

Table 1 (Cont'd)

			Amount Produced (metric tons)	Amount Stored (metric tons)	Total (metric tons)	Remarks
Materiel Supply Capacity	Chief Provisions and Forage	Bread Grain	Peacetime 930,000 Wartime 860,000	250,000	1,180,000 1,110,000	1. Production of fuel and rations and Forage is the actual supply rate.
		Forage Grain	460,000	320,000	780,000	
		Meal Fish	Peacetime 62,000) 230,000) Wartime 160,000)	60,000	Peacetime 352,000 Wartime 282,000	2. Since the quantity of stored arms is practically unknown it is difficult to estimate material supply capacity.
		Potatoes	1,020,000		1,020,000	
		Vegetables	330,000		330,000	
		Sugar	9,000	10,000	19,000	
		Salt	115,000	8,000	123,000	3. Replacement and supply capacity is for the years following the first year of the war (Arms are calculated on a monthly basis)
	Fuel	Coal	Peacetime 13,200,000 Wartime 14,400,000	3,000,000	16,200,000 17,400,000	
		Petroleum	650,000	1,300,000	1,950,000	
	Ore	Steel	220,000	200,000	420,000	
		Pig Iron	10,000		10,000	
	Arms and Ammunition	Aircraft (Monthly Production)	400 Planes		400 Planes	
		Tanks (Monthly)	Peacetime 150 Wartime 75(sic)		150 75(sic)	
		Guns (Monthly	550		550	
		Ammunition		200,000	200,000	

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Table 2A

MANPOWER AND MATERIEL REPLACEMENT CAPACITY OF EASTERN USSR DURING THE FIRST YEAR OF WAR

	Units	Replacement Capacity of Eastern USSR	Basis of 60 Rifle Divisions		Basis of 40 Rifle Divisions		Basis of 30 Rifle Divisions		Basis of 20 Rifle Divisions	
			Requirements Consumption	Sustaining Period	Requirements Consumption	Sustaining Period	Requirements Consumption	Sustaining Period	Requirements Consumption	Sustaining Period
Men and Horses	Men	140,000	1,050,000	1.5 months	750,000	2.2 months	600,000	3 months	450,000	3.7 months
	horses	100,000	230,000	5 months	170,000	7 months	150,000	8 months	130,000	9 months
Chief Provisions and Forage	Bread, Grain (metric tons)	1,110,000	1,780,000	7 months	1,610,000	8 months	1,520,000	8.7 months	1,440,000	9.3 months
	Meat (metric tons)	282,000	256,000	13 months	215,000	15.7 months	194,000	17.4 months	176,000	19 months
	Fats (Metric tons)		29,000		21,000		17,000		13,000	
	Sugar * (metric tons	19,000	47,000	5 months	40,000	5.7 months	37,000	6.1 months	34,000	6.7 months
	Salt * (metric tons)	123,000	209,000	7 months	204,000	7.2 months	201,000	7.3 months	198,000	7.4 months
	Grain Forage* (metric tons)	780,000	750,000	12.5 months	640,000	14.5 months	580,000	16 months	530,000	17.7 months
Liquid Fuel* (metric tons)		1,950,000	4,130,000	4.7 months	3,150,000	7.3 months	2,690,000	8.7 months	2,030,000	11.5 months
Ammunition* (metric tons)		200,000	1,530,000	1.6 months	860,000	2.8 months	700,000	3.4 months	420,000	5.7 months

See Table 2B for Notes.

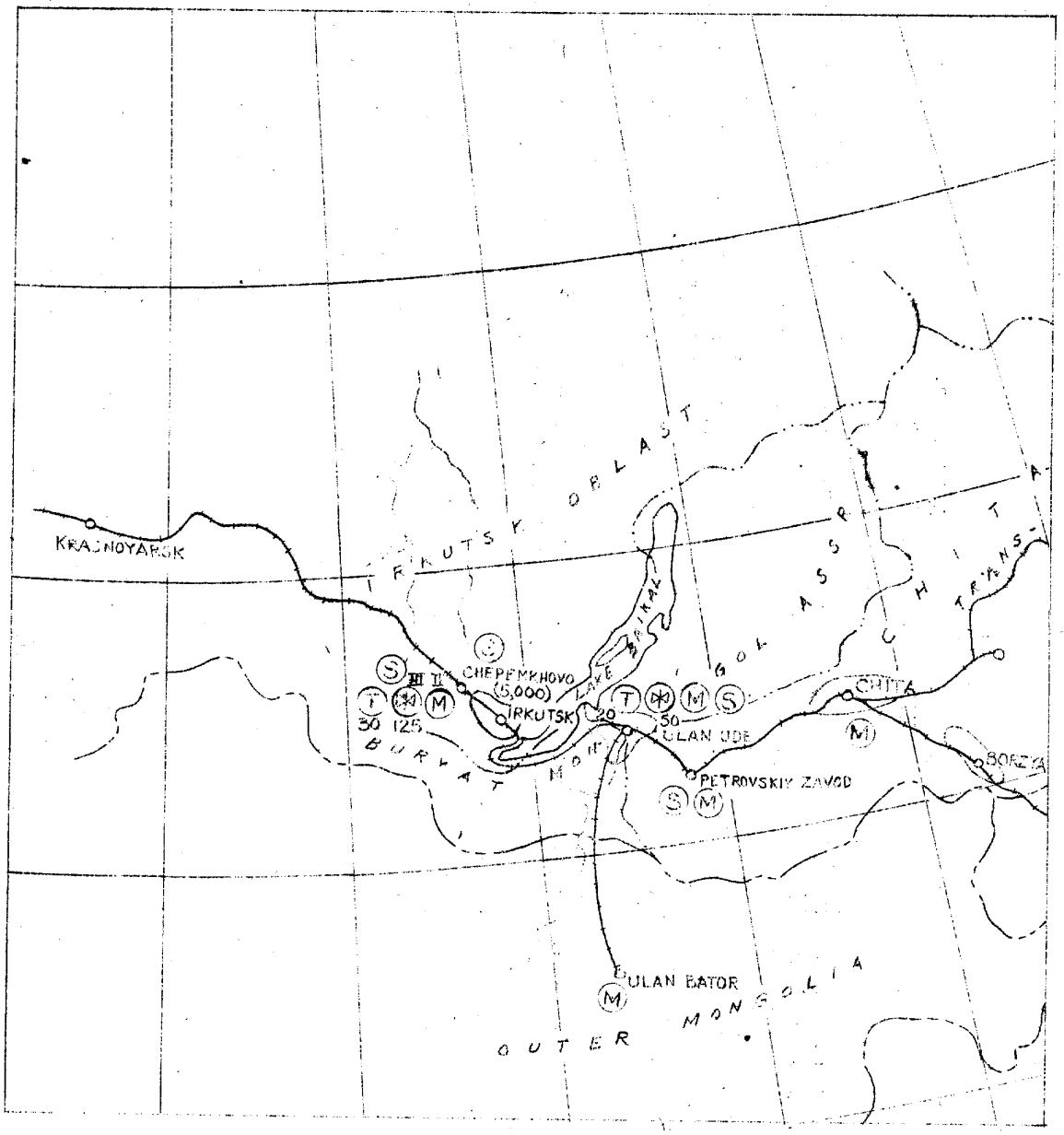
MANPOWER AND MATERIEL REPLACEMENT CAPACITY OF EASTERN USSR DURING THE FIRST YEAR OF WAR

Table 2B

	Units	Replacement Capacity of Eastern USSR	Basis of 60 Rifle Divisions		Basis of 40 Rifle Divisions		Basis of 30 Rifle Divisions		Basis of 20 Rifle Divisions	
			Losses	Deficiency	Losses	Deficiency	Losses	Deficiency	Losses	Deficiency
Aircraft	Planes	400 (monthly)	560	160	420	20	355		165	
Tanks	Tanks	75 (monthly)	350	275	290	215	230	155	120	45
Small Arms	Rifles	9,700 (monthly)	38,300	28,600	25,800	16,100	19,100	9,400	12,750	3,050
Guns	Pieces	550 (monthly)	1,330	780	830	280	670	120	440	

NOTES:
1. The amount of storage is included in the self-sufficiency of Eastern USSR.
2. Losses and deficiency of arms are figured on the basis of monthly averages.
3. Items marked with an * have a reserve quantity of approximately a months supply included in the requirements.

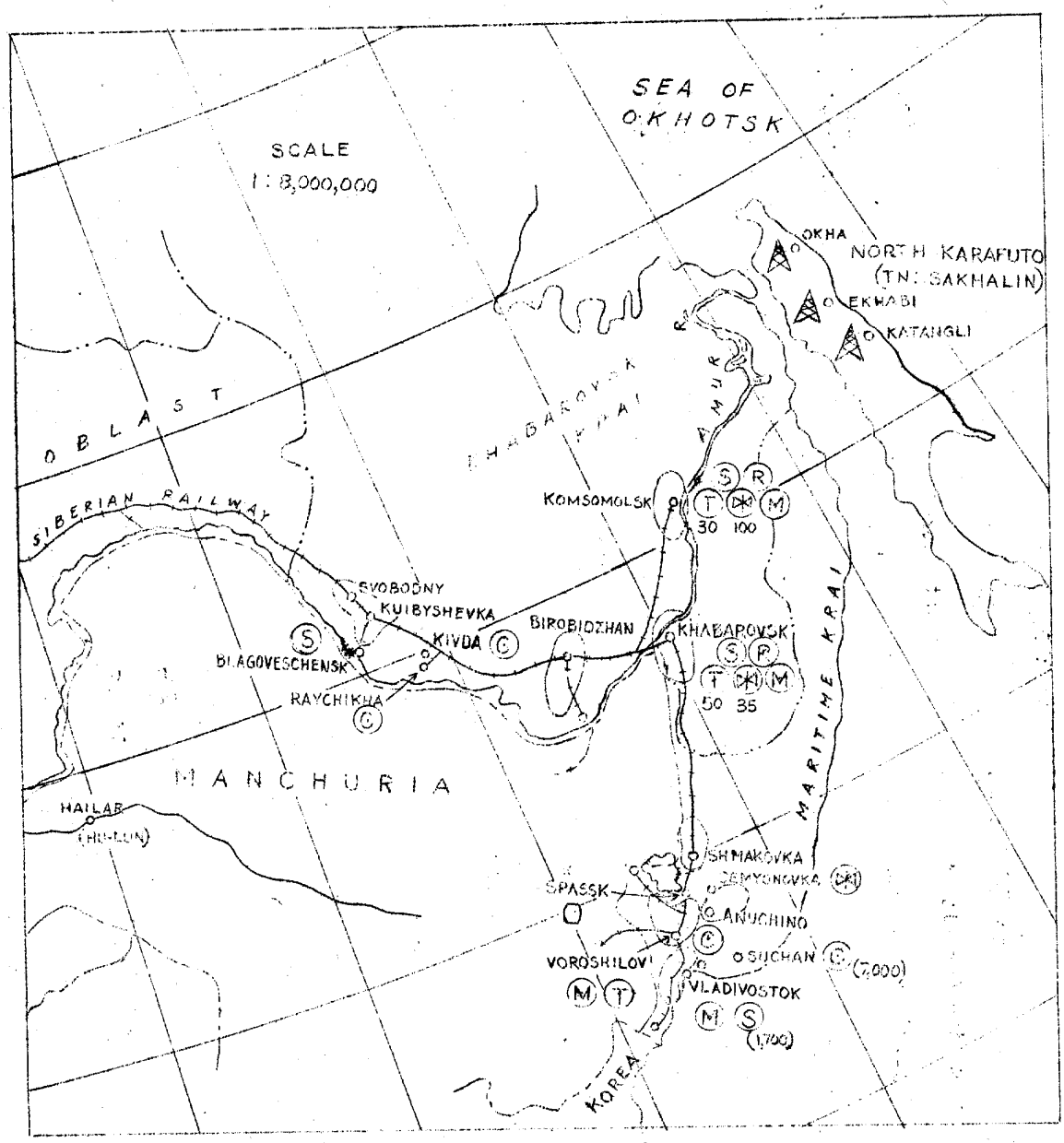
Map 2. DISTRIBUTION OF ESSENTIAL



LEGEND

- Aircraft factories
- Tank (AFV) factories
- General munitions factories
- Steel works
- Oil refineries
- Coalfields
- Oilfields
- Cement factories
- Deposits of raw materials

INDUSTRIES AND PRINCIPAL RESOURCES



LEGEND

Roman numerals near sumbols indicate the number of factories; Arabic numerals indicate their productive capacity per month.

(Figures in brackets) x 1,000 tons
[TN: Deposits of coal, iron, etc.]

PRODUCTIVE CAPACITY AND VOLUME OF STORAGE OF EASTERN USSR

Item	Productive Capacity *	Amount Stored *	Notes
Grain for Bread	930,000 metric tons	250,000 metric tons	1. Productive capacity is the amount produced in a normal year
Coal	14,500,000 metric tons	3,000,000 metric tons	2. Total volume of rations and fodder in storage is about 800,000 tons.
Petroleum	650,000 metric tons	1,300,000 metric tons	Crude oil production is about 1,000,000 metric tons.
Steel	220,000 metric tons	200,000 metric tons	
Aircraft	400 aircraft per month		Productive capacity
Tanks (AFVs)	150 vehicles per month		Productive capacity
Guns	550 guns per month		Productive capacity

* These are approximate figures

II. STUDY OF SUPPLIES AVAILABLE TO EASTERN USSR IN THE EVENT OF WAR WITH JAPAN

(Wartime requirements and available supplies include the replacements for losses of men, animals, weapons, and vehicles.)

It goes without saying that in the event of a war with Japan, wartime requirements will take precedence over all other supplies being sent to Eastern USSR and that the state of operational preparations against Japan, especially the amount of munitions in reserve, will have an effect upon the prosecution of the war. In view of the present rear strength of manpower and materiel, an estimate of requirements in the first year of war for Eastern USSR is given in Table 3. Wartime requirements of the military forces form the basis of the estimate.

Table 3

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AMOUNT OF SUPPLIES REQUIRED IN EASTERN USSR IN THE EVENT OF WAR WITH JAPAN

		Units	Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions (estimated present troop strength)
Provisions and Forage	Men		1,050,000	750,000	600,000	310,000 *
	Horses		230,000	170,000	150,000	30,000 *
	Bread Grain (metric tons)		670,000 (920,000)	500,000 (750,000)	416,000 (660,000)	330,000 (580,000)
	Fats (metric tons)		29,000	21,000	17,000	13,000
	Sugar (metric tons)		28,000 (38,000)	21,000 (31,000)	18,000 (28,000)	15,000 (25,000)
	Salt (metric tons)		85,000 (94,000)	81,000 (89,000)	78,000 (86,000)	75,000 (83,000)
	Forage Grain (metric tons)		-(290,000)	-(180,000)	-(120,000)	-(70,000)
	Total(metric tons)		813,000 (1,371,000)	623,000 (1,071,000)	523,000 (911,000)	433,000 (771,000)
Liquid Fuel			2,180,000 (3,480,000)	1,200,000 (2,500,000)	740,000 (2,040,000)	80,000 (sic) (1,380,000)
Arms and Ammunition	Aircraft	Planes	1,950	200		
	Tanks	Vehicles	3,300	2,600	1,900	500
	Trucks	"	156,000	108,000	84,000	54,000
	Tractors	"	10,800	7,200	5,800	3,600
	Motorcycles	"	6,300	4,500	3,600	23,500
	Small Arms	Pieces	344,000	194,000	114,000	37,000
	Guns	pieces	9,400	3,400	1,400	
	Ammunition (metric tons)		1,330,000 (1,530,000)	660,000 (860,000)	500,000 (700,000)	220,000 (420,000)

NOTES: 1. Amount in () is the supply required if no calculation is made of quantity stored in Eastern USSR.

2. Replacement capacity of troops and horses in Eastern USSR refers to the organization and equipment before the war and is not considered in the number of replacements. However, this is not applicable on the basis of 20 rifle divisions

*Cf figures in Table 2A.

III. ESTIMATE OF THE MILITARY STRENGTH THE USSR COULD EMPLOY AGAINST JAPAN BASED UPON THE SUPPLY TRANSPORTATION CAPACITY TO EASTERN USSR

It is estimated that the maximum military strength the USSR could employ at any one time in a war against Japan, based mainly upon the supply transportation capacity to Eastern USSR, would be 80 rifle divisions.

In other words, the transportation capacity of the Siberian Railroad can be depended upon to supply the nucleus of 60 rifle divisions. If it is possible for the Red Army to use lend-lease goods shipped by sea from the US to Eastern USSR, an additional 15 rifle divisions can be supplied. Moreover, if other war materials transported via the Lena River and lend-lease supplies sent by air from the US are taken into account, an additional six or seven rifle divisions can be supplied.

The following table gives the maximum military strength which could be employed by supply transportation routes:

Routes	Military Strength*	Annual Transportation Capacity (metric tons)*
By Trans-Siberian Railway	60 Rifle Divs	9,300,000
By sea to Eastern USSR	15 Rifle Divs	2,000,000
By river to Eastern USSR	5 Rifle Divs	500,000
By air from US to USSR	1 or 2 Rifle Divs	100,000 to 260,000
Total	80 Rifle Divs	12,000,000

* These figures are approximate

With the exception of the Trans-Siberian Railway in wartime, the possibility and efficiency of utilizing these supply transportation routes, especially the Lena River and air routes, would vary according to circumstances. It can therefore be estimated that the maximum military strength used against Japan at any one time would be the nucleus of the 60 rifle divisions transported by the Trans-Siberian Railway.

Part 2. EXPLANATORY

Section 1. WARTIME REQUIREMENTS IN THE EVENT OF WAR WITH JAPAN

(For fuller details, cf Appendix 2, "Estimate of Wartime Requirements")

In a war against Japan the wartime requirements of the Red Army would be greatly affected by its operational plans and scope as well as Japan's resistance. An estimate is given, in Tables 4-7, in accordance with this line of reasoning, of the requirements of operational forces during the first year of war against Japan.

A. Strength of Forces Engaged in Operations against Japan

Estimated on the basis of 60 rifle division, 40 rifle divisions, 30 rifle divisions, and 20 rifle divisions.

B. Operational Intentions of Forces Engaged in Operations Against Japan

Although the operational intentions will depend upon the operational strength of the forces involved, 60 rifle divisions will be taken as the base figure.

In accordance with the theory of concerted attack along an entire front, which requires complete superiority in military strength, most of Manchuria, Mongolia, and the stretegic areas of Northern Korea and China would be invaded, but the principal area against which an offensive would be launched is the western section of Manchuria.

It is estimated that the approximate duration of operations would be one year.

1. Phases of Operations

a. Initial Phase (about 3 months)
(1) Border engagements (about one month)
(2) From the border to the limit of advance for the initial phase (about two months)

b. Interval between the initial and secondary phases (about three months)

c. Secondary phase (about six months)

2. Essentials of Tactical Command during the Various Phases of Operations.

a. Initial Phase (about three months)

By launching a concerted attack along the entire front, the Red Army will burst through the Japanese Army positions and advance to a line along the T'u-men-Chia-mu-ssu Railroad and the Great and Little Hsing-an Ling Mountains (i.e., a line from Tsitsihar to Pai-ch'eng-tzu to Pei-an).

On the Inner Mongolia front, they will undertake a deep penetration at the very outset to the Yin Shan Range (i.e., a line from Pai-ling-miao to Hsi-ju-hsi-ni to To-lun) and into the Jehol region.

b. Secondary phase (about six months)

After waiting approximately three months for equipment to arrive from the rear, the Red Army will assault the major portion of Manchuria and Mongolia and a section of Korea and North China.

NOTE: (i) The units of the Japanese Army engaged in these operations against the Red Army will be reinforced and will plan a delaying action.

(ii) In general, the phases of the operations will be based upon the seasons.

Table 4

Basis of 60 Rifle Divisions

		Consumption Figures	Main Basis of Calculation
	Men	1,050,000 men	
	Horses	330,000 horses	
		Requirements (metric tons)	
		Military Requirements / Civilian Requirements / Total	
Chief Provisions and Forage	Bread grain *	630,000 / 1,150,000 / 1,780,000	
	Meat	146,000 / 110,000 / 256,000	
	Fats	29,000 / / 29,000	
	Vegetables	480,000 / 1,230,000 / 1,710,000	
	Sugar *	23,000 / 24,000 / 47,000	
	Salt *	20,000 / 189,000 / 209,000	
	Forage grain *	450,000 / 300,000 / 750,000	
	Hay	490,000 / / 490,000	
	Liquid Fuel*	3,440,000 / 690,000 / 4,130,000	
Ammunition Ordnance	Aircraft	6,750 planes	
	Tanks	4,200 Vehicles	
	Armored Cars	360 "	
	Motor Trucks	156,000 "	
	Tractors	10,800 "	
	Motorcycles	6,300 "	
	Rifles	460,000 Rifles	
	Guns	16,000 Guns	
	Ammunition *	1,530,000 Metric tons	

1. Number of troops to be supplied

(a) Men

Rifle	Divisions	1,245,000 men
Air	Divisions	140,000 men
NKVD		100,000 men
Outer Mongolian Army		40,000 men
Navy		75,000 men
Total		1,600,000 men

(b) Horses

Rifle Divisions	185,000 horses
NKVD	20,000 horses
Outer Mongolian Army	40,000 horses
Total	245,000 horses

2. Aircraft and Vehicle Equipment

Aircraft	4,000 planes
(single-engine	2,700 planes)
(twin-engine	1,300 planes)
Tanks	3,000 vehicles
Armored Cars	400 vehicles
Motor Trucks	130,000 vehicles
Tractors	15,000 vehicles
Motorcycles	7,000 vehicles

NOTE: * Includes one month's reserve supply of war materiel

Table 5

BASIS OF 40 RIFLE DIVISIONS

Consumption Figures

Men	750,000 men
Horses	170,000 horses

Requirements (metric tons)

		Military Requirements	Civilian Requirements	Total
Chief Provisions and Forage	Bread grain*	460,000	1,150,000	1,610,000
	Meat	105,000	110,000	215,000
	Fats	21,000		21,000
	Vegetables	340,000	1,230,000	1,570,000
	Sugar*	16,000	24,000	40,000
	Salt*	15,000	189,000	204,000
	Forage grain*	340,000	300,000	640,000
	Hay	370,000		370,000
	Liquid fuel *	2,460,000	690,000	3,150,000
Ammunition Ordnance	Aircraft	5,000	planes	
	Tanks	3,500	vehicles	
	Armored Cars	270	"	
	Motor Trucks	108,000	"	
	Tractors	7,200	"	
	Motorcycles	4,500	"	
	Rifles	310,000	rifles	
	Guns	10,000	guns	
	Ammunition*	860,000	metric tons	

NOTE: * Includes one month's reserve supply of war material.

Main Basis of Calculation

1. Number of troops to be supplied
   (a) Men

Rifle Divisions	830,000 men
Air Divisions	105,000 men
NKVD	100,000 men
Outer Mongolian Army	40,000 men
Navy	75,000 men
Total	1,150,000 men

   (b) Horses

Rifle Divisions	123,000 horses
NKVD	20,000 horses
Outer Mongolian Army	40,000 horses
Total	183,000 horses

2. Aircraft and Vehicle equipment

Aircraft (single-engine 2,000) (twin-engine 1,000)	3,000 planes
Tanks	2,500 vehicles
Armored Cars	300 vehicles
Motor Trucks	90,000 vehicles
Tractors	10,000 vehicles
Motorcycles	5,000 vehicles

Table 6

BASIS OF 30 RIFLE DIVISIONS

Consumption Figures

Men 600,000 men
Horses 150,000 horses

		Requirements (metric tons)		
		Military Requirements	Civilian Requirements	Total
Chief Provisions and Forage	Bread grain*	370,000	1,150,000	1,520,000
	Meat	84,000	110,000	194,000
	Fats	17,000		17,000
	Vegetables	280,000	1,230,000	1,510,000
	Sugar*	13,000	24,000	37,000
	Salt*	12,000	189,000	201,000
	Forage grain*	280,000	300,000	580,000
	Hay	300,000		300,000
	Liquid fuel*	2,000,000	690,000	2,690,000

Ammunition Ordnance	Aircraft	4,250 planes
	Tanks	2,800 vehicles
	Armored cars	180 vehicles
	Motor trucks	84,000 vehicles
	Tractors	5,800 vehicles
	Motorcycles	3,600 vehicles
	Rifles	230,000 rifles
	Guns	8,000 guns
	Ammunition *	700,000 metric tons

NOTE: * Includes one month's reserve supply of war materiel.

Main Basis of Calculation

1. Number of troops to be supplied

(a) Men

Rifle Divisions	623,000 men
Air Divisions	87,000 men
NKVD	100,000 men
Outer Mongolian Army	40,000 men
Navy	75,000 men
Total	925,000 men

(b) Horses

Rifle Divisions	92,000 horses
NKVD	20,000 horses
Outer Mongolian Army	40,000 horses
Total	152,000 horses

2. Aircraft and vehicle equipment

Aircraft (single-engine 1,700) (twin-engine 800)	2,500 planes
Tanks	2,000 vehicles
Armored Cars	200 vehicles
Motor trucks	70,000 vehicles
Tractors	8,000 vehicles
Motorcycles	4,000 vehicles

BASIS OF 20 RIFLE DIVISIONS

Table 7

Men — Consumption Figures: 450,000 men

Horses — Consumption Figures: 130,000 horses

		Requirements (metric tons)		
		Military Requirements	Civilian Requirements	Total
Chief Provisions and Forage	Bread grain *	290,000	1,150,000	1,440,000
	Meat	66,000	110,000	176,000
	Fats	13,000		13,000
	Vegetables	220,000	1,230,000	1,450,000
	Sugar *	10,000	24,000	34,000
	Salt *	9,000	189,000	198,000
	Forage grain *	230,000	300,000	530,000
	Hay	260,000		260,000
	Liquid fuel*	1,340,000	690,000	2,030,000
Ammunition Ordnance	Aircraft	2,000	planes	
	Tanks	1,400	vehicles	
	Armored cars	135	vehicles	
	Motor trucks	54,000	vehicles	
	Tractors	3,600	vehicles	
	Motorcycles	2,350	vehicles	
	Rifles	153,000	rifles	
	Guns	5,300	guns	
	Ammunition*	420,000	metric tons	

NOTE: * Includes one month's reserve supply of war materiel

Main Basis of Calculation

1. Number of troops to be supplied
   (a) Men

Rifle Divisions	500,000 men
Air Divisions	50,000 men
NKVD	100,000 men
Outer Mongolian Army	30,000 men
Navy	50,000 men
Total	730,000 men

   (b) Horses

Rifle Divisions	78,000 horses
NKVD	20,000 horses
Outer Mongolian Army	30,000 horses
Total	128,000 horses

2. Aircraft and vehicle equipment

Aircraft (single-engine 800) (twin-engine 400)	1,200 planes
Tanks	1,000 vehicles
Armored cars	150 vehicles
Motor trucks	45,000 vehicles
Tractors	5,000 vehicles
Motorcycles	2,500 vehicles

Section 2. CURRENT CONDITIONS IN EASTERN USSR FROM THE STANDPOINT OF REAR PREPARATIONS

In this chapter, the standard peacetime population will be taken as 6,050,000 (700,000 in service). Moreover, regional divisions for this chapter are given in Map 3, "Map of Regional Divisions." (Cf Appendix Map 1, "Map of Industrial Resources of Eastern USSR and Outer Mongolia from the Standpoint of Rear Preparations")

I. STUDY OF MATERIEL SELF-SUFFICIENCY

A. General

1. For a long time the USSR has planned to perfect her preparations for a war against Japan, using Eastern USSR as the major base from which to control Eastern Asia. At the same time, overcoming innumerable difficulties, she has labored to develop and strengthen the country, with a view to making Eastern USSR economically self-sufficient in war and peace. Since the Manchurian Incident, the USSR has paid special attention to strengthening her position to counterbalance the increases in Japanese forces in Manchuria, but the Russo-German War broke out before she was able to establish economic self-sufficiency.

After the outbreak of the Russo-German War, the USSR had no alternative but to prosecute that war and recapture those territories she had lost to Germany. As a result, she was incapable of paying any attention to Eastern USSR. Consequently, not only was the establishment of economic self-sufficiency in Eastern USSR halted temporarily but also the vast mobilization program after the outbreak of the war and the stoppage of the constant immigration from Central European USSR caused a considerable drain on manpower. In addition, a decline in transportation capacity became evident as rolling stock, automobiles and trucks were sent to the western front. As a result of the singular lack of machines and equipment in Eastern USSR, her productive capacity decreased generally. Furthermore, certain of her reserves of munitions were sent to the western front immediately after the outbreak of hostilities in answer to the pressing demand for them. In view of these circumstances, it is believed that the materiel self-sufficiency of Eastern USSR decreased after the outbreak of the Russo-German War.

Subsequently, Eastern USSR concentrated mainly upon satisfying the requirements of the German front and upon relieving the situation in Central European USSR by striving to increase and expand her munitions industry. However, the production of arms, iron, steel and certain other non-metallic goods seems to have decreased, a fact which cannot be ignored.

2. Even in peacetime Eastern USSR lacked many essential goods and depended upon imports from Central European USSR and the US for certain necessary commodities. In view of the limitations imposed by present conditions, there are numerous difficul-

ties impeding the establishment of self-sufficiency in Eastern USSR. The situation is liable to become progressively worse in wartime because of the vast requirements.

B. Provisions and Forage

1. Bread grain

a. Present Estimates

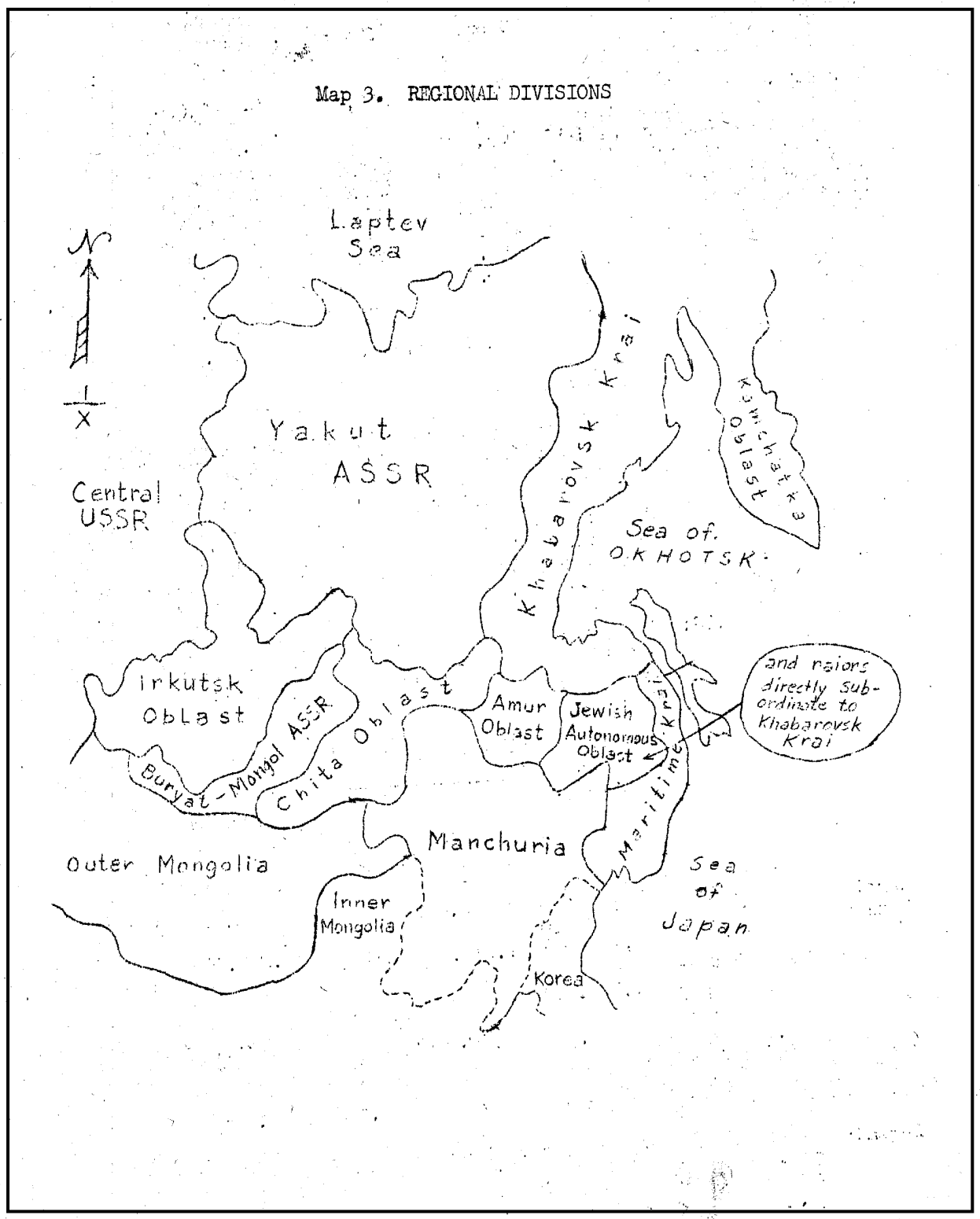
Since the outbreak of the Russo-German War, there has been a marked shortage of labor and machinery and a decline in production. The maximum peacetime supply of bread grain was about 930,000 metric tons while the requirements were mainly as shown in the table below. The deficit of about 450,000 metric tons was made up by imports from the US which arrived at ports in Eastern USSR, by mixing various types of grain and by using potatoes as a substitute.

Supply (metric tons)			Demand (metric tons)*		
Production	Seed	Actual Supply	Military	Civilian	Total
1,130,000	200,000	930,000	230,000	1,150,000	1,380,000

Deficit: 450,000

* The military requirements are 330 kilograms per year (900 grams per day) per person, and the civilian, 215 kilograms per year (590 grams per day) per person.

Map 3. REGIONAL DIVISIONS



The general outline of regional requirements should be as given in the following table: (in metric tons)

Region	Supply	Demand	Surplus or Deficiency
Maritime Krai	73,000	270,000	(-)197,000
Raions directly subordinate Khabarovsk Krai and Jewish Autonomous Oblast	78,000 125,000	131,000	(-) 53,000
Amur Oblast		121,000	(-) 4,000
Khabarovsk Krai	3,000	111,000	(-)108,000
Chita Oblast	205,000	261,000	(-) 56,000
Buryat-Mongol ASSR	155,000	114,000	(-) 41,000
Yakut ASSR	45,000	88,000	(-) 43,000
Irkutsk Oblast	247,000	284,000	(-) 37,000
Total (Eastern USSR)	931,000	1,380,000	(-)449,000

b. Wartime Estimates

Since it is possible in wartime to maintain an actual maximum supply of 860,000 metric tons (Note i) and an estimated reserve of 250,000 metric tons (Note ii), Eastern USSR's potential maximum supply is 1,110,000 metric tons. The relationship between demand and supply for the military forces is given in the table below. In addition to the large supplies sent from Central European USSR, considerable quantities of essential goods will be received under lend-lease.

NOTES: (i) The figures for 1944 are the total production of about 1,060,000 metric tons less seed (a decrease of 5% from the peacetime crop).

(ii) The details of reserve supplies are as given in "F," Status of Reserve Stocks of Munitions.

		A	B	C	D
		metric tons			
Wartime Demand	Military*	630,000	460,000	370,000	290,000
	Civilian	1,115,000			
	Total	1,780,000	1,610,000	1,520,000	1,440,000
Eastern USSR's Potential Maximum Supply		1,110,000			
Maximum of Essential Supplies		670,000	500,000	410,000	330,000
Period of Sustenance from Eastern USSR's Potential Maximum Supply		7 mos	8 mos	8.7 mos	9.3 mos

Legend: A - Basis of 60 rifle divisions
B - " " 40 " "
C - " " 30 " "
D - " " 20 " "

* The military demand includes one month's reserve supply, at the rate of 365 kilograms yearly per man (1 kilogram per day).

2. Meat

a. Present Estimates

(1) Animal Meat

The decrease in meat production in Eastern USSR after the outbreak of war with Germany was caused by added restrictions upon slaughtering and a shortage of feed. Annual production fell below 62,000 metric tons.

The approximate deficiency of 6,000 metric tons was almost made good by imports from the US, arriving at ports in Eastern USSR and by a reduction in civilian demands. The situation of supply and demand is as follows:

	Supply	Demand*			
		Military	Civilian	Total	Deficiency
Animal Meat (metric tons)	62,000	18,000	50,000	68,000	6,000

Animals included in the "supply" above are as shown below:

Type of Animal	No of Livestock	% Slaughtered	Production (metric tons
Cows	1,620,000	30	32,000
Sheep	1,550,000	45	11,000
Hogs	1,350,000	40	19,000
Total	4,520,000		62,000

* Military requirements 25 kilograms per person per annum (70 grams daily)

Civilian requirements 9.2 kilograms per person per annum (25 grams daily)

Summary of Regional Supply and Demand

Region	Supply	Demand	Surplus or Deficiency
	(in metric tons)		
Maritime Krai	8,000	16,000	- 8,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	2,000	7,000	- 5,000
Amur Oblast	4,000	6,000	- 2,000
Khabarovsk Krai	2,000	5,000	- 3,000
Chita Oblast	16,000	13,000	- 4,000(sic)
Buryat-Mongol ASSR	10,000	5,000	+ 5,000
Irkutsk Oblast	14,000	13,000	+ 1,000
Yakutsk ASSR	6,000	4,000	+ 2 000
Total (Eastern USSR)	62,000	68,000	- 6,000

(2) Fish

Although the fishing industry has shown the greatest surplus of any of Eastern USSR's industries, since the outbreak of the Russo-German War, a shortage of labor has caused a tendency towards decreased production. However, with careful management, the catch was maintained at 290,000 metric tons.

A surplus of 140,000 metric tons was canned, salted or dried, and shipped principally to European USSR. Conditions of supply and demand are in general as follows:

Supply (metric tons)			Demand** (metric tons)			
Catch	Discard*	Net Supply	Military	Civilian	Total	Surplus
290,000	60,000	230,000	30,000	60,000	90,000	140,000

* Discards are 20% of catch.

** Military requirements 43.8 kilograms per person per annum (120 grams daily)

Civilian requirements 11 kilograms per person per annum (30 grams daily)

Summary of Regional Supply and Demand

Region	Supply (metric tons)	Demand (metric tons)	Surplus or Deficiency
Maritime Krai	81,000	25,000	+ 56,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	10,000	11,000	- 1,000
Amur Oblast	---	9,000	- 9,000
Khabarovsk Krai	130,000	7,000	+123,000
Chita Oblast	---	16,000	- 16,000
Buryat-Mongol ASSR	5,000	6,000	- 1,000
Irkutsk Oblast	---	14,000	- 14,000
Yakut ASSR	4,000	4,000	---
Total (Eastern USSR)	230,000	92,000	+138,000

b. Wartime Estimates

During the war, at many points off the coast of Eastern USSR, it became impossible to carry on the fishing industry and, as a result, there was a decrease in the catch. If the present 70% of the pre-war catch can be maintained, the net supply will be approximately 160,000 metric tons. Including animal meat, the total supply will be approximately 222,000 metric tons. When this is added to the 60,000 metric tons stored in Eastern USSR, the potential wartime total of meat available can be estimated at 282,000 metric tons.

However, it is estimated that the requirements of the military forces in the first year of war will be as shown in the following table. Notwithstanding the increase in wartime

requirements, Eastern USSR can be self-sufficient if her potential supply is maintained; no supplementation of supplies will be necessary. Although a decrease may occur in the fish catch, complete regional self-sufficiency can be maintained by increasing the slaughter of cattle, if there is no anxiety over a decrease in livestock, or by utilizing the abundant livestock resources of Outer Mongolia.

(For Outer Mongolia's supply capacity to Eastern USSR, see Appendix 1, "The Value of Outer Mongolia from the Standpoint of Rear Preparations")

		A	B	C	D
			in metric tons		
Wartime Demand	Military*	146,000	105,000	84,000	66,000
	Civilian	110,000			
	Total	256,000	215,000	194,000	176,000
Period of Sustenance from Eastern USSR's Potential Supply		13 mos	15.7 mos	17.4 mos	19 mos

Legend: A - basis of 60 rifle divisions
B - " " 40 " "
C - " " 30 " "
D - " " 20 " "

*Military requirements (54.8 kilograms of animal meat per person per annum (150 grams daily)
(36.5 kilograms of fish per person per annum (100 grams daily)

3. Vegetables

a. Present Estimates

Conspicuous success has resulted from thorough encouragement of private and industrial vegetable gardens. The marked increase in production has made possible self-sufficiency of vegetables in Eastern USSR.

(1) Conditions of supply and demand of potatoes are generally as follows:

Supply (metric tons)				Demand (metric tons)			
						Indus-	Total
Produce	Damaged*	Seed	Net Supply	Military**	Civilian***	trial****	
1,520,000	150,000	350,000	1,020,000	110,000	540,000	150,000	800,000
			Surplus	220,000			

* approximately 10% of total
** military requirements 150 kilograms per person per annum (400 grams daily)
*** civilian requirements 90 kilograms per person per annum (250 grams daily)
**** approximately 10% of total

Although the table shows a surplus of 220,000 metric tons, when this is utilized to supplement the bread shortage or as hog feed, supplies are barely kept within the limits of self-sufficiency.

(2) As can be seen from the table below, there is a deficiency of about 50,000 metric tons in green vegetables, but it is estimated that self-sufficiency can be maintained within the supply capacity.

Supply (metric tons)			Demand*** (metric tons)			
Produce	Loss*	Net Supply	Military**	Civilian	Total	Deficiency
440,000	110,000	330,000	60,000	320,000	380,000	50,000

* approximately 25% of production
** military requirements 100 kilograms per person per annum (300 grams daily)
*** civilian requirements 60 kilograms per person per annum (160 grams daily)

Summary of Regional Supply and Demand of Potatoes and Green Vegetables

Region	Supply	Demand	Surplus or Deficiency
	in metric tons		
Maritime Krai	244,000	224,000	+ 20,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	152,000	115,000	+ 37,000
Amur Oblast	249,000	118,000	+ 131,000
Khabarovsk Krai	54,000	89,000	- 35,000
Chita Oblast	267,000	225,000	+ 42,000
Buryat-Mongol ASSR	58,000	92,000	- 34,000
Irkutsk Oblast	285,000	241,000	+ 44,000
Yakut ASSR	20,000	69,000	- 49,000
Total (Eastern USSR)	1,349,000	1,173,000	+ 176,000

b. Wartime Estimates

Military requirements are greatly increased in wartime; statistics for wartime requirements are given in the table below. By utilizing Eastern USSR's potential vegetable supply of 1,350,000 metric tons, and by cutting down civilian requirements, it will be possible for this region to be self-sufficient without importing.

Wartime Vegetable Demands

	Military*	Civilian	Total
	in metric tons		
Basis of 60 Rifle Divisions	480,000	1,230,000	1,710,000
Basis of 40 Rifle Divisions	340,000	"	1,570,000
Basis of 30 Rifle Divisions	280,000	"	1,510,000
Basis of 20 Rifle Divisions	220,000	"	1,450,000

* Military Requirements 299 kilograms per person per annum (820 grams daily)

4. Salt and Sugar

a. Present Estimates

(1) Sugar

The annual production of sugar from sugar beets does not exceed 9,000 metric tons. This leaves a deficiency of 21,000 metric tons against the demand of 30,000 metric tons. This shortage will be balanced mainly by imports from the US via ports in Eastern USSR.

Supply and Demand of Sugar

Supply	Demand*			Deficiency
	Military	Civilian	Total	
	in metric tons			
8,500	6,400	23,500	29,900	21,400

* Military requirements 9.2 kilograms per person per annum (25 grams daily)

Civilian requirements 4.4 kilograms per person per annum (12 grams daily)

(2) Salt

The main salt-producing centers are located at Tarimi Lake in the Maritime Krai, at Usole in Irkutsk Oblast, and at KENPEMJAI* (TN: probably Kempendvay) and NORUDOUIKU* (TN: probably Nordvik) in Yakut ASSR. The annual production does not exceed 1,150,000 metric tons. The deficiency of 80,000 metric tons is filled by imports from Central European USSR. The following table shows general conditions of supply and demand: (metric tons)

Supply	Demand						Deficiency
	Military*	Civilian**	Fishing ***	Industry ****	Miscel-laneous	Total	
115,000	7,700	44,800	64,000	80,100		196,600	81,600

* military requirements 11 kilograms per person per annum (30 grams daily)

** civilian requirements 8.4 kilograms per person per annum (23 grams daily)

*** 80% of the catch is preserved, requiring 35% of the salt supply

**** includes salt for industrial use; for livestock (cattle and horses - 5.5 kilograms per animal per annum); and for losses (approximately 5% of demand)

b. Wartime Estimates

(1) Sugar

The potential wartime supply of Eastern USSR is 19,000 metric tons which includes the 10,000 metric tons in storage. To meet the requirements of military forces in the first year of war, supplies will have to be received from Central European USSR or under lend-lease from abroad as shown in the following table: (metric tons)

		Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
Wartime Demand	Military*	23,000	16,000	13,000	10,000
	Civilian	24,000	24,000	24,000	24,000
	Total	47,000	40,000	37,000	34,000
Eastern USSR's Potential Supply		19,000	19,000	19,000	19,000
Supplies Required		28,000	21,000	18,000	15,000
Period of Sustenance from Eastern USSR's Potential Supply		5 mos	5.7 mos	6.1 mos	6.7 mos

* The military requirements, which include one month's reserve supply, are 13 kilograms per person per annum (35 grams daily).

(2) Salt

Notwithstanding the sharp decrease in the fish catch in Eastern USSR and the corresponding decrease in the requirements of the fishing industry, the demand for salt did not decrease. Current conditions demanded wartime increase in the supply of salted fish and pickled goods. Civilian requirements must be studied in the light of present wartime military requirements. The potential supply of Eastern USSR is 1,230,000 metric tons, which includes 8,000 metric tons in storage. To meet the needs of the military forces in the first year of warsupplies will have to be supplemented from Central European USSR. The relationship of supply and demand is shown in the following table: (metric tons)

		Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
Wartime Demand	Military*	20,000	15,000	12,000	9,000
	Civilian	189,000	189,000	189,000	189,000
	Total	209,000	204,000	201,000	198,000
Eastern USSR's Potential Supply		123,000	123,000	123,000	123,000
Supplies Required		86,000	81,000	78,000	75,000
Period of Sustenance from Eastern USSR's Potential Supply		7 mo	7.2 mo	7.3 mo	7.4 mo

* The military requirements, including one month's reserve, are 11 kilograms per person per annum (80 grams daily), and 5.5 kilograms per horse per annum (15 grams daily).

5. Forage Grain

a. Present Estimates

In contrast with the situation where Eastern USSR depends upon lend-lease from abroad for its supplies of bread grain, very strenuous efforts have been made to increase her production of forage grain because it is essential for her to be completely self-sufficient in this field. In recent years her annual peacetime production was estimated at 460,000 metric tons, a surplus of 20,000 metric tons over the demand of 440,000 metric tons. This surplus, however, was allotted for the development of livestock, which had diminished after the outbreak of the Russo-German War, and the balance between supply and demand was barely maintained.

The relationship between supply and demand is shown in the following table: (in metric tons)

Supply			Demand				
Production	Seed	Net Supply	Military*	Civilian**	Industrial	Total	Surplus
560,000	100,000	460,000	140,000	270,000	30,000	440,000	20,000

* There are about 95,000 military horses, each requiring 1,460 kilograms per annum (4,400 grams daily).

** The annual civilian requirements for horses are 614,000 metric tons, for cattle 1,610,000, for sheep 1,530,000 and for hogs 387,000.

Regional Supply and Demand of Forage Grain

Region	Supply	Demand	Surplus or Deficiency
	in metric tons		
Maritime Krai	36,000	95,000	- 59,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	39,000	32,000	+ 7,000
Amur Oblast	62,000	39,000	+ 23,000
Khabarovsk Krai	2,000	22,000	- 20,000
Chita Oblast	104,000	109,000	- 5,000
Buryat-Mongol ASSR	77,000	28,000	+ 49,000
Irkutsk Oblast	124,000	86,000	+ 38,000
Yakut ASSR	22,000	32,000	- 10,000
Total (Eastern USSR)	466,000	443,000	+ 23,000

b. Wartime Estimates

The amount of forage grain stored in wartime is estimated at approximately 320,000 metric tons. If it is possible to maintain the volume of production previously mentioned, Eastern USSR's potential supply will be 780,000 metric tons. During the first year of war, the wartime military requirements were calculated to be as shown in the following table, which reveals that no supplementation of supplies will be necessary from Central European USSR.

		A	B	C	D
		in metric tons			
Wartime Demand	Military*	450,000	340,000	280,000	230,000
	Civilian	300,000	300,000	300,000	300,000
	Total	750,000	640,000	580,000	530,000
Period of Sustenance from Eastern USSR's Potential Supply		12.5 mo	14.5 mo	16 mo	17.7 mo

Legend: A - Basis of rifle divisions
B - " " 40 " "
C - " " 30 " "
D - " " 20 " "

* The military requirements, including one month's reserve, are 1,825 kilograms per horse per annum (5,000 grams daily).

6. Hay

a. Present Estimates

Because of the recent shortage of labor, the production of hay in Eastern USSR has shown a tendency to decrease. Production is being maintained, with difficulty, at the rate of 2,000,000 metric tons annually, which is calculated to be approximately 800,000 metric tons below the desired amount. Nonetheless, Eastern USSR appears to be completely self-sufficient within the limits of this production.

Regional Supply and Demand

Region	Supply	Demand	Surplus or Deficiency
	in metric tons		
Maritime Krai	120,000	274,000	+ 154,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	59,000	77,000	- 18,000
Amur Oblast	148,000	127,000	+ 21,000
Khabarovsk Krai	23,000	50,000	- 27,000
Chita Oblast	470,000	740,000	- 270,000
Buryat-Mongol ASSR	458,000	455,000	+ 3,000
Irkutsk Oblast	548,000	568,000	- 20,000
Yakut ASSR	193,000	497,000	- 304,000
Total (Eastern USSR)	2,019,000	2,788,000	- 769,000

NOTE: Since it is difficult to determine the demand, this table is for reference only.

b. Wartime Estimates

There was a marked increase in military requirements at the outbreak of war. Estimates of military requirements for the first year of war are given in the table below. If this rate of production were maintained, and civilian requirements curtailed, it would be possible for the region to be self-sufficient without supplies from outside.

Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
	in metric tons		
490,000	370,000	300,000	260,000

NOTE: 2,000 kilograms per horse per annum (5,500 grams daily)

C. Fuel

1. Coal

a. Present Estimates

Because of the movement of labor and material to the west, a considerable decrease in the production of coal in Eastern USSR has been apparent. The annual output is estimated at approximately 14,600,000 metric tons. The actual supply would be approximately 13,200,000 metric tons after deductions had been made for ternary waste.

Because the regional requirements have been diminished, due to the decrease in consumption by the railroads and the curtailment of civilian supplies, the demand seems to be approximately 12,300,000 metric tons. It appears that the deficiency of approximately 900,000 metric tons is being shipped west, mainly to the Krasnoyarsk area. Details of the recent coal output follow: (in metric tons)

Region		Coal Mine	Amount Mined	Ternary Waste	Net Output
	Maritime Krai	Suchan	1,000,000	100,000	900,000
		Artem	1,700,000	170,000	1,530,000
		Tavrichanka	200,000	20,000	180,000
		Voroshilov	190,000	19,000	171,000
		Podgorodnensk	150,000	15,000	135,000
		Kraskino	100,000	10,000	90,000
		Sub-total	3,340,000	334,000	3,006,000
Khabarovsk Krai	Kamchatka	Korfa	20,000)	10,000	90,000
		Anadyr	80,000)		
	Sakhalin	Sakhalin	720,000	72,000	648,000
		Bureya	150,000	15,000	135,000
	Amur Oblast	Kivda			
		Raychikha	2,920,000	292,000	2,628,000
		Sub-total	3,890,000	389,000	3,501,000
	Chita Oblast	Eastern Coal Trust	1,810,000	181,000	1,629,000
		Bukachacha	275,000	28,000	247,000
		Sub-total	2,085,000	209,000	1,876,000
	Buryat-Mongol ASSR	Ozero Gusinoye	60,000)	9,000	76,000
		RUISOGORUSUKI*	25,000)		
	Irkutsk Oblast	Cheremkhovo	5,000,000	500,000	4,500,000
		Oblast Coal Trust	32,000	3,000	29,000
		Sub-total	5,032,000	503,000	4,529,000
	Yakut ASSR	SANGAARUI*		11,000	96,000
		Kangalaskiy	50,000)	10,000	85,000
		Zyryanka	45,45,000)		
		Sub-total	202,000	21,000	181,000
Total (Eastern USSR)			14,634,000	1,465,000	13,169,000

NOTE: The ternary waste is calculated at approximately 10% of amount mined.

The following table shows recent consumption, by consumers: (in metric tons)

	Consumers	Consumption	% Consumed
	Railroads	3,610,000	30
	Industry	3,510,000	28
	Generating Plants	1,650,000	13
	Water Transportation	1,210,000	10
	Fishing Industry	240,000	2
Heating	Red Army	200,000	17
	Red Navy	60,000	
	Civilian	1,820,000	
Total		12,300,000	100

Regional Supply and Demand of Coal

Region	Supply	Demand	Surplus or Deficiency
	in metric tons		
Maritime Krai	3,000,000	2,890,000	+ 110,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	---	1,850,000	+1,850,000
Amur Oblast	2,760,000	880,000	-1,880,000
Khabarovsk Krai	740,000	880,000	- 140,000
Chita Oblast	1,880,000	2,760,000	- 880,000
Buryat-Mongol ASSR	80,000	940,000	- 860,000
Irkutsk Oblast	4,530,000	2,000,000	+2,530,000
Yakut ASSR	180,000	100,000	+ 80,000
Total (Eastern USSR)	13,170,000	12,300,000	+ 870,000

b. Wartime Estimates

Although an increase in the coal requirements of the munitions and other essential industries might be expected in wartime, no great increase will occur. This situation is due to the fact that wartime munitions production, in the Eastern USSR, limited by the weakness of the steel industry and the lack of other industries, will not be extensive.

The railroads, on the other hand, will require two or two and a half times as much coal as normally, as a result of the obvious increase in transportation. The amount of coal required by the railroads alone is expected to reach 9,000,000 metric tons. If the amount required for other industries is included, it is believed that the total tonnage required in wartime will reach 18,100,000 metric tons. (Cf table below)

However, present conditions in Eastern USSR lead one to believe that, unless labor and materiel are brought into the area, it will be difficult to achieve this volume of production to meet the rapidly increased wartime requirements. Although approximately 16,000,000 metric tons of coal appear to be produced annually, the actual supply will only be about 14,400,000 metric tons, leaving a deficiency of approximately 3,700,000 metric tons. (Cf notes (i) and (ii) below)

However, if it is assumed that approximately 3,000,000 metric tons are stored in the region, this deficiency will be reduced to 700,000 metric tons, thereby easing the pressure on wartime transportation.

NOTES: (i) Prior to the outbreak of the Russo-German War, the coal output of Eastern USSR was estimated at approximately 16,000,000 metric tons annually. In spite of the shortage of labor and materiel subsequent to the outbreak of hostilities, this pre-war figure is taken as the wartime maximum potential.

(ii) From the standpoint of output potential, loading facilities and rail transportation capacity, it is presumed that the following five mines will concentrate on increased production, - Artem, Suchan, Kivda, Raychikha and Cheremkhovo.

The wartime consumption of coal by various consumers is estimated to be as follows: (in metric tons)

Consumers	Annual Requirements	Remarks
Railroads	9,000,000	2½ times peacetime demand
Industry	4,000,000	10% increase above peacetime
Generating Plants	1,600,000	Slight increase
Water Transportation	1,200,000	
Fishing Industry	200,000	
Heating Military	300,000	
Civilian	1,800,000	
Total	18,100,000	

2. Petroleum

a. Present Estimates

The oilfields of Eastern USSR are concentrated in Northern Sakhalin at Okha, Ekhabi and Katangli. Although normally approximately 700,000 metric tons of crude oil were produced annually, the annual output was increased to about 1,000,000 tons after the acquisition of Japanese concessions in March, 1944. (Cf note (i) below) Of the 900,000 metric tons remaining, after a 10% deduction has been made for local consumption, 500,000 metric tons are refined at the Ordzhonikidze Refinery in Khabarovsk and the remainder at the Amur Refinery in Komosomolsk. (Cf note (ii) below) These two refineries together should be capable of producting approximately 650,000 metric tons of refined oil annually. (Cf note (iii) below)

NOTES: (i) According to information from German sources, Northern Sakhalin produced approximately 1,300,000 metric tons of oil in 1942 and about 3,000,000 metric tons in 1945.

(ii) According to information from German sources, the potential output of Eastern USSR refineries is roughly as stated below. It is also believed that when the pipe line between Okha and Sofiskoye has been completed, the output of refined oil from the Amur Refinery in Khabarovsk will be increased considerably.

Komsomolsk:	approximately 1,000,000 metric tons (3rd 5 Year Plan Target)
Khabarovsk:	Approximately 400,000 metric tons
Nikolaevsk:	200,000 metric tons

(iii) The amount of oil refined is reckoned at approximately 80% of the 810,000 metric tons after a 10% deduction has been made for the crude oil consumed at the mine and in the district.

Although strenuous efforts are being made to control consumption, approximately 360,000 metric tons are required for military use and 620,000 for civilian use, a total of 980,000 metric tons. (Cf table below) The deficiency of approximately 330,000 will have to be imported from Central European USSR and from the US via various ports in Eastern USSR.

Moreover, the oil refined in Eastern USSR refineries is of very low grade and, as a result, 90,000 metric tons of aviation fuel have to be imported. (Cf note (i) below

Recent oil consumption by various consumers is roughly as follows: (in metric tons)

Consumers	Consumption	% Consumed
Military	280,000	31
Industry	300,000	34
Agriculture	100,000	11
Communications and Transportation	170,000	19
Civilian	40,000	5
Total	980,000(sic)	100

NOTE: (i) The consumption of aviation fuel is approximately 70,000 metric tons, the greater portion of which is for Red Army aircraft and for aircraft flying the northern air routes from US.

b. Wartime Estimates

If the 1,300,000 metric tons in storage were available for use in wartime, the potential supply in Eastern USSR, including the annual production, would amount to approximately 1,950,000 metric tons.

In modern warfare, the amount of oil required by military forces is very great. Moreover, with the acceleration of industry and communications an increase in the civilian rate of consumption is inevitable.

The following table gives an estimate of the requirements of various military forces during the first year of war. It can be seen from the table that considerable quantities of oil will have to be imported from Central European USSR and from abroad.

		Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
			in metric tons		
Wartime Demand	Military*	3,440,000	2,460,000	2,000,000	1,340,000
	Civilian**	690,000			
	Total	4,130,000	3,150,000	2,690,000	2,030,000
Potential Supply from Eastern USSR		1,950,000			
Supplies Required		2,180,000	1,200,000	740,000	80,000
Period of Sustenance from Eastern USSR's Potential Supply		4.7 mo	7.3 mo	8.7 mo	11.5 mo

* Military requirements include one month's reserve.

** Details of civilian requirements are as follows: (in metric tons).

Industry	350,000	(10% increase over normal)
Agriculture	100,000	
Communications & Transportation	200,000	(Slight increase over normal)
Miscellaneous	40,000	
Total	690,000	

D. Mining Industry

1. Iron Manufacturing Industry

a. Present Estimates

Since the development of Eastern USSR's iron ore resources has been extremely slow, her iron manufacturing industry has had to depend on Central European USSR for her supplies of iron ore and scrap iron. Moreover, very little manganese or caking coal is produced in the area. (Cf note (i) following page)

In view of this extreme scarcity of essential materials, there appear to be no iron foundries with the exception of those at Stary Amur and Petrovsk. Approximately 220,000 metric tons of steel and 10,000 metric tons of pig iron are produced annually. (Cf note (ii) on following page) In spite of the restrictions on consumption and the cessation of constructional work, approximately 570,000 metric tons of steel and 180,000 metric tons of pig iron are required to satisfy the demand. As a result, approximately 350,000 metric tons of steel and 170,000 metric tons of pig iron will have to be imported from Central European USSR or via Eastern USSR ports from the US.

NOTES: (i) The only mines producing are those at Nikolaevsk (producing 10,000 metric tons annually) and at Balyaginski in Chita Oblast (producing 30,000 metric tons annually).

(ii) The annual production of steel is roughly as follows:

Location	Factory Name	Annual Steel Production in metric tons
Komsomolsk	Stary Amur	100,000
Petrovsk-Zavod	Petrovsk-Zabaikalsky	65,000
Irkutsk	Kuibyshev Heavy Machinery Works	40,000
Blagoveschensk	Metallist Metal Works	
Vladivostok	Primorskey Metallist Works	15,000
Ulan Ude	Cast Steel Works attached to Railroad Works	
Khabarovsk	Molotov Machine Works	
Total		220,000

b. Wartime Estimates

In wartime, the development of the munitions industry, the construction of railroads, and the need for replacement for railroads will increase the demand for steel. (Cf note below) Supplies from Central European USSR are more likely to comprise manufactured steel products rather than scrap iron or iron ore; the wartime demands upon the Eastern USSR iron manufacturing industry, therefore, will certainly not be great.

Steel reserves stored in Eastern USSR are estimated at approximately 200,000 metric tons, which should be sufficient to meet emergency wartime demands.

NOTE: For further details, see Appendix 6, "The Time, Steel and Labor Required to Construct and Rebuild Railroads in the Event of an Invasion of Manchuria by the Red Army."

2. Non-ferrous Metals

Eastern USSR is extremely rich in reserves of non-ferrous metals. Although strenuous efforts have been made to increase production to satisfy demands since the outbreak of the Russo-German War, the metal industry has remained undeveloped. The complete processing of the metal is not carried out in the area where it is mined and graded. Smelting is carried out at factories in Central European USSR and certain of the completed products returned to Eastern USSR.

The production and distribution of the principal metals are roughly as shown in the table on the following page. Tin, molybdenum, tungsten and mica are mainly produced in Eastern USSR which constitutes the main source of supply for the Soviet munitions industry.

Type of Metal	Annual Output in metric tons	% of Total	Remarks
Lead	9,000	72	Although deposits are to be found around Olga and Tetyukhe in Maritime and in Chita Oblast, the latter mine is the only one active.
Zinc	20,000	17	
Tin	20,000	100	All deposits are in the Zabaikal area.
Molybdenum	1,000	100	Mainly produced at Umalta on the upper Bureya River and at Jida in Buryat-Mongol ASSR.
Tungsten	1,000	70	The productive mines are at Umalta and west of Jida.
Mica	10,000	80	Principally produced at Slyudyanka and Bilyuzunskoe in Irkutsk Oblast.

Other important resources of which there are abundant reserves in Eastern USSR are silica, manganese, asbestos, etc; of these, only silica is mined.

E. Munitions Industry Capacity

1. General Estimates

a. Special characteristics of Eastern USSR's munitions industry

Recently noted special characteristics of the munitions industry in Eastern USSR are as follows:

(1) Tendency of Komsomolsk Area to become Center of Munitions Industry

Not only is Komsomolsk favorably located for national defense from a geographical standpoint but it also possesses such essential industries as iron manufacture and oil refining and constitutes a so-called kombinat zone. It therefore possesses the characteristics which will enable it to become the center of the munitions industry. Aircraft, tank, and other factories have already been established, and further development may be expected in the future. Its strategic position is such that, when the construction program has been completed, it can serve as a munitions supply base for the Red Army in Eastern USSR even if the Trans-Siberian Railway were cut. Komsomolsk deserves special attention because of its position in relation to lend-lease supplies entering the USSR. The problem of its rapid conversion into a base will be vey difficult, however, without outside aid.

(2) Development of Irkutsk and Ulan Ude Areas

These areas are comparatively well located from the standpoint of industry because there are convenient communication facilities. The ease with which supplies of materiel can be sent from Central European USSR has given rise to considerable transfer of aircraft and other munitions factories from this area to Eastern USSR since the outbreak of the Russo-German War.

(3) Relationship between Munitions Industry and Lend-lease to USSR via Eastern USSR

In wartime, not only would the unfavorable location of the munitions industry in Eastern USSR be offset by lend-lease supplies from the US arriving via Eastern USSR ports, but it can also be forecast that this industry would play an extremely important part in building up the military potential of the Red Army in Eastern USSR.

That is to say, the munitions industry, which in the past has been forced to depend upon supplies of materiel from Central European USSR and from abroad, has now been strengthened by lend-lease supplies. Even if the supply routes for raw materials from Central European USSR were cut, the military resources of the Red Army in Eastern USSR could be maintained with these lend-lease supplies.

b. Weaknesses of Eastern USSR's Munitions Industry

The weaknesses of Eastern USSR's munitions industry are as follows:

(1) Weakness of Iron Manufacturing Industry

The main weakness of the munitions industry lies in the extreme backwardness of the iron manufacturing industry, which is the basic munitions industry. The iron manufacturing industry is extremely weak in Eastern USSR because of the low production of iron ore and the scarcity of caking coal; it is dependent upon Central European USSR for most of the raw materials essential to the manufacture of iron. These, therefore, are the basic deficiencies of the iron manufacturing industry in Eastern USSR and can be taken as the factors restricting the development of its munitions industry.

(2) Absence of Aluminum Production

No aluminum is produced in Eastern USSR. The

fact that the area is entirely dependent upon Central European USSR and upon aid from abroad constitutes a basic weakness of the munitions industry and particularly of the aircraft industry.

(3) Deficiencies of Machine Industry

In addition to the lack of essential raw materials mentioned above, there is no machine industry capable of exploiting them. Since the outbreak of the Russo-German War, the majority of machines imported have been sent to Central European USSR. This will hinder the future development of the munitions industry in Eastern USSR.

2. Aircraft

a. Present Estimates

Strenuous efforts have been made since the outbreak of the Russo-German War to bring about a considerable increase in aircraft production in Eastern USSR by stepping up the production of those factories already in existence and of those transferred from Central European USSR. Consequently, monthly production figures have reached a total of 400 aircraft. The majority of the aircraft produced at present are dispatched to the west.

Formerly, it was necessary to await supplies of almost all aircraft parts from Central European USSR and from the US, but recently it has been possible to produce engines and instruments in Komsomolsk and Irkutsk.

The production capacity of aircraft factories is roughly as shown in the following table:

Factory Designation	Location	Monthly Production (planes)	Type of a/c
Factory No 116	Semyonovka	90	Fighters
Factory No 83	Khabarovsk	35	Bombers
Factory No 126	Komsomolsk	100	Bombers and Assault planes
Factory No 99	Ulan Ude	50	Fighters
Factory No 39	Irkutsk	125	Bombers and Fighters
Factory No 125	Irkutsk		
Factory No 77	Irkutsk		

(C)

The principal aircraft repair and aircraft parts plants are as follows:

Aircraft Repair Plant No 145	Vladivostock	
Aircraft Repair Plant No 160	Novo Nikolskoe	
Aircraft Repair Plant	Vozdvizhenka	
Aircraft Repair Plant No 111	Voroshilov	
Aircraft Repair Plant No 83	Khabarovsk	100 engines per month
Aircraft Repair Plant No 113	Khabarovsk	
Aircraft Repair Plant No 126	Komsomolsk	150 engines per month
Aircraft Repair Plant No 117	Chita	Repair and manufacture of parts
Electrical Plant No 389	Svilsk	Manufacture of aircraft electrical equipment
Aircraft Repair Plant	Yakutsk	For the use of the US-USSR northern air routes

b. Wartime Estimates

Although strenuous efforts will be made to increase aircraft production in wartime, no sharp increase can be expected because of the dependence of Eastern USSR upon Central European USSR for materials. The main emphasis appears to be laid upon the maximum development of the manufacture of parts and of repair facilities.

Assuming that the present rate of production could be maintained in time of war, the following table is a rough estimate of losses and replacements to meet the requirements of various military units for a one month period during the first year of war.

NOTE: For estimates of the losses and replacements in wartime, see Appendix 2, "Brief Estimate of Wartime Requirements" from which the following is extracted.

	Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
		Planes		
Monthly Losses	560	420	355	165
Eastern USSR's Potential Supply	400			
Replacements Required	160	20	-	-

3. Tanks

a. Present Estimates

Tank production has increased steadily and it now appears that approximately 150 tanks and 30 armored cars are produced per month.

The following table shows the approximate monthly production by individual factories:

Factory No 119	Voroshilov	20 tanks	15 armored cars
Factory No 106	Khabarovsk	10	
Kaganovich Factory No 105	Khabarovsk	40	
Factory No 413	Komsomolsk	30	
Ulan Ude Ordnance Plant	Ulan Ude	20	15 armored cars
Factory No 104	Irkutsk	30	

b. Wartime Estimates

In wartime, not only would it be impossible to accelerate production for the reasons stated above but it would be difficult to maintain even the present production rate. It appears that the main emphasis is being laid on the maximum development of the rear repair facilities of the tank factories of Eastern USSR. It is believed that production itself will be cut in half.

Estimates of losses and replacements for various wartime units for a one month period during the first year of war are given in the following table:

	Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
Monthly Losses	350	290	230	120
Eastern USSR's Potential Supply	75			
Replacements Required	275	215	155	45

4. Small Arms and Artillery

a. Present Estimates

Although figures on the production of small arms and artillery are difficult to obtain, recently there has been a scarcity of the materials necessary for the manufacture of these items, and production has fallen off. The following is an estimate of present monthly production:

Small caliber weapons	100
Mortars	450
Heavy machine guns	300
Light machine guns	400
Rifles	9,000

The main ordnance factories known to be in existence are:

Factory Name	Location
Voroshilov Far Eastern Naval Factory	Vladivostok
Ordnance Factory	Voroshilov
Mikoyan Ordnance Factory	Sysoyevka
Molotov Machine Manufacturing Plant	Khabarovsk
Degtyjarev Light Ordnance Factory	Khabarovsk
Ordnance Factory	Komsomolsk
Ordnance Repair Plant No 73	Petropavlovsk
Military Factory No 41	Chita
Ordnance Factory	Petrovsk-Zabaikalski
Buryat-Mongol Ordnance Factory	Ulan Ude
Ordnance Factory	Irkutsk
Kuybyshev Metal Works	Irkutsk
Artillery Factory	Batreynaya

b. Wartime Estimates

In view of the special character of the Red Army, wartime losses of artillery and small arms will probably be very heavy, but the possibilities of increased production are rather remote, as mentioned above. Replacements from present production will be insignificant compared with wartime losses. This will be especially true in Eastern USSR where it is necessary to depend upon Central European USSR for all ordnance supplies of medium, or larger, caliber.

The following is a rough estimate of monthly losses in wartime and replacements required to satisfy the needs of various military units:

	Basis of 60 Rifle Divisions		Basis of 40 Rifle Divisions		Basis of 30 Rifle Divisions		Basis of 20 Rifle Divisions	
	Rifles	Arty	Rifles	Arty	Rifles	Arty	Rifles	Arty
Monthly Losses	38,300	1,330	25,800	830	19,100	670	12,750	440
Eastern USSR's Potential Supply	9,700 rifles; 550 artillery pieces							
Replacements Required	28,600	780	16,100	280	9,400	120	3,050	-

5. Ammunition

a. Present Estimates

The production figures for ammunition in Eastern USSR are not known, but, considering the deficient iron manufacturing industry and the undeveloped chemical industry, a great production capacity cannot be expected.

Efforts, however, are being made at present to produce small caliber ammunition, and the most recent trend appears

to be towards increasing the production of mortar shells.

The following is a list of ammunition factories known at present:

Voroshilov Far Eastern Navy Yard	Vladivostok
Ammunition Factory	
Ordnance Factory	
Land Mine Manufacturing Factory	Voroshilov
Mikoyan Ordnance Factory	Sysoyevka
Ordnance Depot	Spassk
Ussuri War Plant	Lazo
Stalin Amunition Factory;	Khabarovsk
Molotov Machine Factory)	
Artisan Factory	Komsomolsk
Ordnance Factory	Svobodny
Land Mine Factory	Chita
War Plant No 41	Petrovsk-Zavod
Land Mine Factory	
Buryat-Mongolian Ordnance Factory	Ulan Ude
Kuybyshev Machine Factory	Irkutsk
Nikolayevsk Ammunition Factory No 137	Nizhneudinsk
ERIBAN* Ammunition Factory	In area within the jurisdiction of Khabarovsk
Semyonovka Ammunition Factory	Semyonovka area

b. Wartime Estimates

For the reasons stated above, a rapid increase in production would be difficult in wartime. In view of the enormous wartime consumption, considerable supplies would have to be imported from Central European USSR despite the reserve stock of Eastern USSR, approximately 200,000 metric tons.

The following is an estimate of the requirements of various military units during the first year of war: (in units of 10,000 metric tons)

	Basis of 60 Rifle Divisions	Basis of 40 Rifle Divisions	Basis of 30 Rifle Divisions	Basis of 20 Rifle Divisions
Wartime Demand	153	86	70	42
Period of Sustenance from Eastern USSR's Potential Supply	1.6 mo	2.8 mo	3.4 mo	5.7 mo

6. Miscellaneous

Little is known about the production of chemical warfare equipment, military vehicles and ships. The following, however, is a rough list of the principal factories known to be in existence at present.

a. Shipyards

Nothing is known of the ship-building situation, but it would be practically impossible to undertake any new construction of large vessels in view of the condition of steel production in Eastern USSR. It has been observed that with the recent increase in the volume of lend-lease supplies to the USSR efforts have been concentrated upon the repair of freighters. In view of the deficiencies of the steel industry, it appears that no improvement in shipbuilding can be expected even in wartime.

The principal shipyards are as follows:

Name of Yard	Location	Remarks
Voroshilov Far Eastern Navy Yard	Vladivostok	Capable of building submarines, destroyers, etc.
Oshpovski-Kilov Shipyard	Khabarovsk	Latest shipbuilding equipment
Amur Shipyard	Komsomolsk	Capable of repairing submarines and vessels of 4,000 ton class
Shipyard	Nikolaevsk	
Shipyard	Petropavlovsk	

b. Chemical Warfare Equipment Factories:

Name of Factory	Location	Equipment Manufactured
Poison Gas Factory	Vladivostok	Poison gas
Iodine Factory	Olga	Chemical warfare supplies
Arsenic Factory	Barabash	Poison gas
Lazmov Arsenic Factory	Irkutsk	Poison gas and other chemical weapons
Lazmov Chemical Factory No 97	Usole	Poison gas and smoke-screen compounds
Chemical Factory	Tulun	Poison gas, smoke candles and flares

c. Military Vehicle Factories:

Name of Factory	Location	Products Manufactured	Remarks
Voroshilov Light and Heavy Vehicle Factory	Krasnaya-rechka	Field cooking utensils; Light & heavy vehicles	Annual production approx 5,500
Cart Factory	Birobidzhan	Light and heavy vehicles	Annual production approx 11,000
Military Vehicle Factory	Tulun	Field vehicles Light and heavy vehicles	

NOTE: Although nothing is known about the production of these factories, they are probably incapable of doing more than renovating those vehicles at present in existence.

F. Status of Reserve Stocks of Munitions

(Cf Appendix Map 2, "Installations for the Storage of Reserve Stocks in Eastern USSR and Mongolia")

It is not necessary to stress the importance of the role which the reserve stocks of munitions will play in the prosecution of a war against Japan by the Red Army, but it is extremely difficult to obtain an estimate of the quantities of weapons, ammunition and materiel comprising these reserve stocks.

For the following reasons, however, it can be assumed that considerable reserves are in existence at present.

1. General Observations on the Storage of Munitions

a. Eastern USSR's Lack of Material Self-sufficiency

As previously stated, the discrepancy between wartime demand and supply will reach alarming proportions as a natural result of the special characteristics of Eastern USSR. It has been observed that, in order to counteract this deficiency, she has been laying in stocks of those essential materials, in peacetime, particularly munitions whose production rate is low.

b. Special Topographical Features Affecting National Defense

The Trans-Siberian Railway, which is the supply artery for Eastern USSR, can be cut with comparative ease in time of war by Japanese troops, especially in the area to the east of Amur Bay.

c. Tendency to Increase Military Preparations against Japan Prior to Outbreak of Russo-German War

From the outbreak of the Manchurian Incident till the Russo-German War, a tendency to increase the military forces maintained in Eastern USSR, stimulated by the stepping up of Japanese preparations in Manchuria, was evident. It is therefore only natural that the USSR should lay in reserves of munitions, which would be of particular importance in carrying out agressive operations against Japan.

d. Red Army's Theory of Materiel Superiority

The annihilation of the ehemy by superiority of materiel resources is one of the characteristics of the Red Army's plan of operations. In order to be able to meet the tremendous wartime demands, especially in the event the Russians took the offensive, it was necessary to lay in large stores of reserve supplies in peacetime.

The fact that the Soviet was capable of making good her tremendous materiel losses, exemplified by operations in the Russo-German War, was mainly due to the reserve supplies stored in peacetime, a fact worthy of deep thought and reflection.

It can be understood that troops and munitions would be sent west from Eastern USSR after the outbreak of the Russo-German War to make good the tremendous losses of material incurred in operations. There can be no doubt, and it has been confirmed by intelligence reports, that certain of the lend-lease supplies arriving via Far Eastern ports were stored for wartime use, but no figures can be established as to the quantity.

2. Quantity of Vital Munitions Held in Reserve

There is very little information on the quantity of munitions held in storage in Eastern USSR but the following is a rough estimate based upon conditions in Eastern USSR prior to the outbreak of the Russo-German War and upon her storage facilities.

a. Provisions

(1) Eastern USSR is not self-sufficient in foodstuffs and is compelled to import supplies of food from Central European USSR every year. After the outbreak of the Russo-German War, this deficiency was counteracted by supplies from the US and it was just possible to balance supply and demand by curtailing civilian requirements. It is believed that in view of these conditions strenuous efforts were made over a prolonged period to lay in stores of food as a precaution against wartime shortages.

(a) Judging from those storage installations whose existence has already been confirmed by intelligence reports, about 600,000 metric tons should be in storage. If this were added to the reserves in the area west of the Buryat-Mongol ASSR, about which it is difficult to obtain any information, and in the remainder of the interior, it is estimated that the total would amount to approximately 800,000 metric tons.

(b) If one year's supply (Cf table on following page)for the prewar Red Army in Eastern USSR (about 30 rifle divisions) is still maintained, then the reserves can be estimated at approximately 800,000 metric tons.

The following table gives a rough estimate of the provisions, including durable provisions, for one year required by a force of 30 rifle divisions (700,000 men, 180,000 horses).

	Items	Annual Requirements (metric tons)	Actual Supply (metric tons)
Personnel	Wheat Flour	244,800	204,400 (1,000 grams daily)
	Dry Black Bread	35,800	33,215 (650 grams daily)
	Canned Meats	102,000	63,875 (250 grams daily)
	Salt	8,000	7,665 (30 grams daily)
	Sugar	10,000	8,945 (35 grams daily)
	Miscellaneous	40,000	
Total Provisions for Personnel		440,600	
Fodder	Barley	358,000	328,500 (5,000 grams daily)
	Salt	1,000	675 (10 grams daily)
Total Fodder		359,000	
Total		799,600	

NOTES: (i) The ratio of wheat flour to black bread is five to one.

(ii) As in Japan, the weight of wrapping, etc. is counted into the required amount.

(2) The following, based upon intelligence reports, is a rough estimate by area of the amount of reserves in storage assuming that all available storage facilities are utilized.

Area	Reserves (metric tons)
Maritime Krai	168,000
Khabarovsk Area	90,000
Blagoveschensk Area	182,000
Okhotsk Area	21,000
Chita Area	89,000
Ulan Ude Area	41,000
Outer Mongolian Area	6,000
Total	597,000

b. Liquid Fuel

It is estimated that the amount of liquid fuel stored in installations whose existence is known plus that stored in installations whose existence is not yet known would total approximately 1,300,000 metric tons. This is the equivalent of slightly more than 15 months' peacetime supply.

The following table gives an estimate by area of supplies in reserve on the basis of the storage facilities, assuming that all available storage facilities are utilized.

Area	Reserves (metric tons)
Maritime Krai	380,000
Khabarovsk Area	300,000
Blagoveschensk Area	40,000
Okhotsk Area	470,000
Chita Area	70,000
Ulan Ude Area	40,000
Total	1,300,000

c. Ammunition and Miscellaneous

Although there is particularly little information available on the amount of ammunition in reserve, that amount is believed to be sufficient to supply the pre-war force for two engagements.

A serious munitions shortage was caused by the sharp drop in the production of ammunition following the temporary loss of territory after the outbreak of the Russo-German War. Although some of the ammunition, especially of medium and large caliber, stored in Eastern USSR was sent to the west during the initial stages of the war, it is estimated that the reserves still amount to 200,000 metric tons--provided that a sufficient amount was retained to supply the pre-war force of 30 rifle divisions for one engagement (sufficient small caliber ammunition for two engagements).

NOTE: The amount of ammunition required by one rifle division for one engagement is estimated at 4,500 metric tons, with medium and large caliber ammunition comprising half that total.

A discussion of the ordnance and munition reserves will be omitted here because of the lack of reliable data.

3. Military Supply Bases from the Standpoint of Storage Facilities

The following table shows roughly the military supply bases of the Red Army in Eastern USSR as related to the distribution of storage installations.

Area	Military Supply Bases
Eastern Area	Vladivostok area; Shmakovka area; Anuchino and Daubikhe area; Voroshilov area
Northeastern Area	Khabarovsk and Komsomolsk area; Birobidzhan area
Northern Area	Kuybyshev and Svobodny area
Western Area	Chita area; Borzya area; Ulan Ude area; Irkutsk area

4. The following table shows the materiel self-sufficiency of Eastern USSR in wartime from the standpoint of reserves.

NOTE: Only those items of munitions whose storage in Eastern USSR has been comparatively easy to ascertain have been entered on this table.

Item		Amount in Storage in Eastern USSR	60 Rifle Divisions		40 Rifle Divisions		30 Rifle Divisions		20 Rifle Divisions	
			Military Requirements	Period of Sufficiency	Military Requirements	Period of Sufficiency	Military Requirements	Period of Sufficiency	Military Requirements	Period of Sufficiency
Provisions	Bread grain	250,000	584,000	5 mo	420,000	7 mo	340,000	9 mo	267,000	11 mo
	Meats	60,000	246,000	5 "	105,000	7 "	84,000	9 "	66,000	11 "
	Sugar	10,000	20,000	6 "	15,000	8 "	12,000	10 "	9,000	13 "
	Salt	8,000	18,000	5 "	13,000	7 "	10,000	10 "	8,000	12 "
	Forage grain	320,000	450,000	8 "	340,000	11 "	280,000	14 "	230,000	17 "
Liquid fuels		1,300,000	3,140,000	5 "	2,250,000	7 "	1,820,000	8 "	320,000 (sic)	13 "
Ammunition		200,000	200,000	2 "	660,000	4 "	520,000	5 "	320,000	7 "

NOTES: The column for military requirements represents yearly needs; it does not include reserves.
(Unit: metric tons)

G. Lend-Lease to the USSR via Eastern USSR Ports

1. Present Estimates

It is estimated that lend-lease supplies from the US arriving via Eastern USSR ports recently averaged an annual total of approximately 1,700,000 metric tons (about 24% of all supplies entering the USSR). (Cf note below) Goods imported vary with change in the needs of the USSR and recent figures show that food comprised 32%, fuel 26%, and machinery, including transportation equipment, 35%; miscellaneous goods accounted for 7%. The effect which these imports have had upon the economy of Eastern USSR is not clear, but it is known that the foodstuff and miscellaneous goods are mainly consumed there while the machinery, metal products and vehicles are mostly shipped to the west.

NOTE: The following is a rough estimate of the imports under lend-lease since the Lend-Lease Act went into effect. This volume is increasing year by year.

1942	approx 370,000 metric tons
1943	approx 1,220,000 metric tons
1944	approx 1,700,000 metric tons

It appears that 90% of the lend-lease supplies imported via Eastern USSR still come by the North Pacific route and are unloaded at Vladivostok.

Since the beginning of 1943, aircraft have been ferried from the US by the Northern Air Route. Recently, approximately 250 to 300 aircraft have been ferried to the west via Velkal, Yakutsk and Krasnoyarsk.

2. Wartime Estimates

As long as friendly relations are maintained between the USSR and the US, the strategic value of lend-lease supplies arriving via Eastern USSR ports will probably be great.

The volume of supplies which get through will be entirely dependent upon the mastery of the sea and the air. The volume of munitions imported by sea continues to increase. Its value as a rear supply route for the Red Army in Eastern USSR is as great as that of the main supply route from Central European USSR, the Trans-Siberian Railway.

The volume of munitions imported by air over the Northern Air Route is not expected to be great; however, it is anticipated that aircraft and lightweight materiel will ultimately be transported over the air route in considerable volume (Cf note)

NOTE: Cf Chapter III, "Study of Logistics" for details of supply and transportation to Eastern USSR.

II. STUDY OF REPLACEMENT OF MEN, HORSES AND VEHICLES

A. Replacement of Men and Horses

1. Distribution and Types of Men and Horses

a. Men

(1) Total Population

The total population of Eastern USSR as of March 1945 was estimated at 6,050,000, including 700,000 military personnel and 360,000 convict laborers.

(2) Density and Distribution of Population

Under the Second Five Year Plan, it was planned to make Eastern USSR self-sufficient. Technicians and workmen were sent to develop her industrial resources (these did not include the large numbers of people who migrate there every year) with the result that her population before the outbreak of the Russo-German was gradually increasing. Despite this, the population in general remained exceedingly low and sparsely distributed. The only densely populated area was along the Trans-Siberian Railway.

The density of population by area is as follows:

Region	Area (sq km)	Population	Density (persons per sq km)
Maritime Krai	206,000	1,031,000	5.0
Khabarovsk Krai	2,572,000	1,567,000	0.6
Chita Oblast	720,000	1,148,000	1.6
Buryat-Mongol ASSR	331,000	531,000	1.6
Irkutsk Oblast	923,000	1,313,000	1.4
Yakut ASSR	3,030,000	412,000	0.1
Total (Eastern USSR)	7,781,000	6,047,000	0.8

(3) Status (Civilian or Military), Sex and Age of Population

Because Eastern USSR constitutes the Far Eastern base for the defense of the USSR, the military population is considerably out of proportion to the normal civilian population which consists mainly of immigrants. It appears that, in spite of the extensive mobilization which took place after the outbreak of the Russo-German War, the male population exceeds the female in a proportion of 110 to 100. It also appears from observation of age groups, that the largest segment of the population falls

into the 16 to 30 age group. Of those eligible for labor conscription, (16-59 years of age), there are 1,650,000 males and 1,480,000 females, a total of 3,130,000, comprising 59% of the population.

The ratio of military personnel to civilains, by area, is roughly as follows:

Region	Military	Civilian	Convict Laborers	Total
Maritime Krai	345,000	646,000	80,000	1,031,000
Raions directly subordinate to Khabarovsk Krai and the Jewish Autonomous Oblast	55,000	478,000	45,000	578,000
Amur Oblast	91,000	323,000	100,000	514,000
Khabarovsk Krai	81,000	282,000	112,000	475,000
Chita Oblast	110,000	1,036,000	7,000	1,148,000
Buryat-Mongol ASSR	2,000	526,000	1,000	531,000
Irkutsk Oblast	16,000	1,293,000	5,000	1,313,000
Yakut ASSR	0	402,000	10,000	412,000
Total (Eastern USSR)	700,000	4,987,000	360,000	6,047,000

The sex and age groups of civilians is roughly as follows:

Age Group	Male	Female	Total	% of population (by age)
Below 15	849,000	808,000	1,657,000	33%
16 - 59	1,653,000	1,483,000	3,136,000	63%
Above 60	108,000	86,000	194,000	4%
Total	2,610,000	2,377,000	4,987,000	100%
% of population (by sex)	52,4%	47.6%	100%	

(4) Labor Potential

Not only has the mobilization of some 870,000 persons after the outbreak of the Russo-German War and the restrictions upon the annual influx of about 200,000 immigrant laborers caused a steady drain upon the labor potential of the USSR, but it appears that the labor deported to assist in the reconstruction of recaptured territories is further taxing that labor potential.

As previously mentioned, approximately 3,130,000 (about 1,650,000 male and 1,450,000 female) of the total population of Eastern USSR are eligible for labor conscription. Of these, approximately 2,700,000 are at present employed, the balance of approximately 430,000 consisting of housewives, people incapable of work, and students. There is very little possibility of

these people being put to work because Eastern USSR is deficient in social institutions or factories employing women. It can therefore be assumed that the labor potential of Eastern USSR has now reached its maximum.

The following table shows roughly the distribution of the normal labor potential:

Industry	Persons	Percentage by Industry
Agriculture	665,000	24.7%
Forestry	66,900	2.5%
Fishery	212,200	7.9%
Mining	1,237,400	45.9%
Transportation and Communications	171,400	6.4%
Administration	79,800	2.9%
Education and Culture	196,900	7.3%
Finance and Commerce	65,200	2.4%
Total	2,694,800	100.0%

b. Horses

(1) Total Number of Horses

The total number of horses in Eastern USSR in March 1945 was estimated at 709,000, of which 95,000 were military and 614,000 privately owned.

(2) Distribution and Types of Horses

The following table shows the distribution nad types of military and privately-owned horses, by area:

Region	Military Horses	Privately-owned Horses Active	Inactive	Total	Total
Maritime Krai	38,000	39,400	9,900	4.93	8.73
Raions directly subordinate to Khabarovsk Krai and the Jewish Autonomous Oblast	13,500	11,300	2,800	1.41	2.76
Amur Oblast	12,500	16,700	4,200	2.09	3.34
Khabarovsk Krai	9,200	8,400	2,100	1.05	1.97
Chita Oblast	19,000	108,900	46,700	15.56	17.45
Buryat-Mongol ASSR	1,000	61,700	26,400	8.81	8.91
Irkutsk Oblast	1,800	91,000	22,800	11.38	11.56
Yakut ASSR		97,400	64,900	16.23	16.20
Total (Eastern USSR)	95,000	434,800	179,800	61.46	70.92

2. Replacement Potential for Men and Horses

a. Manpower Replacement Potential

As previously stated in the section on labor potential, since the outbreak of the Russo-German War, the only people

eligible for conscription are laborers. For this reason, either the labor potential will have to be bled or production cut down if these men are mobilized. Because the labor potential of Eastern USSR has already been bled to the limit, it must be assumed that present production will be partially cut down to permit the further mobilization of residents of the area. However, even if further mobilization were enforced, the maximum replacement potential of Eastern USSR would not exceed 90,000 men, necessitating a 3% reduction in production potential.

The following is a calculation of the replacement potential:

Total population as of March 1945, including those mobilized (excluding the military units stationed in the area)		6,219,000
Number of males in above total		
Residents (52% of total)	3,046,000	
Convict Labor (males 80% of total no of convicts)	288,000	
Number eligible for military service (16-50 years of age) (55% of male population)		1,833,000
Number physically fit (75% of those eligible)	1,374,000	
Number of physically fit in essential work (30% of physically fit)	412,000	
Number mobilized from outbreak of war to 1944 (Cf table below)	872,000	
Number of physically fit remaining	90,000	

The following table shows numbers of reservists called and men conscripted after the outbreak of war:

Year	Reservists	Conscripts	Total
1941	160,300		160,300
1942	363,900	49,900	413,800
1943	78,500	123,200	201,700
1944	47,600	48,800	96,400
Total	650,300	221,900	872,200

If approximately 80% of the 60,000 men eligible for conscription, i.e., approximately 50,000, could be drafted, the total replacement potential of Eastern USSR would amount to 140,000 men.

b. Remounting Potential

As previously stated, the present number of active horses in Eastern USSR is estimated at approximately 435,000. If it is assumed that 330,000 of these are required in industry (mainly in agriculture), 100,000 will be available for commandeering as remounts.

Total horsepower required in industry	approx 600,000 HP
Mechanical horsepower available for use at time of mobilization	approx 130,000 HP
Horsepower derived from livestock substitutes (cattle)	approx 120,000 HP
Deficiency in horsepower replacement potential	approx 250,000 HP
Horsepower of 330,000 horses (assuming 1 horse = 0.75 HP)	approx 250,000 HP

B. Vehicle Replacement Potential

1. Present Vehicle Situation

a. Automobiles and Tractors

In Eastern USSR, where the railroads are not fully developed, transportation by automobile plays an extremely important role in communications. It should be noted that there has recently been a marked tendency to develop the road networks to satisfy military, economic and, above all, operational requirements.

A summary of the present situation in trucks and tractors follows:

(1) Military Vehicles and Tractors of the Red Army in Eastern USSR.

The number of military vehicles and tractors maintained by the Red Army in Eastern USSR is unknown because of the lack of information, but it can be assumed that many of those maintained prior to the war have been transferred to the west since the outbreak of the Russo-German War. Excluding those transferred, the present reserves can be estimated at approximately 22,600 trucks and 3,300 tractors.

NOTES: (i) Although the number of trucks sent to the west would vary according to the area, the average is believed to be 27% of the total.

(ii) The following table gives an estimate of the distribution of trucks and tractors by area:

Area	Trucks	Tractors
Maritime Krai	7,800	2,000
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	1,700	100
Amur Oblast	2,400	300
Khabarovsk Krai	2,000	200
Chita Oblast	2,800	300
Buryat-Mongol ASSR	300	100
Irkutsk Oblast	500	100
Yakut ASSR	--	--
Outer Mongolia	5,100	200
Total (Eastern USSR)	22,600	3,300

(2) Civilian Trucks and Tractors

If the number of vehicles sent to the west since the outbreak of war is taken as a basis for the number held in Eastern USSR prior to the Russo-German War, it can be estimated that there are approximately 26,000 trucks (Cf note i) and 11,200 tractors including 1800 tracked and 9,700 wheeled vehicles (Cf note ii).

NOTES: (i) Estimated distribution of civilian trucks by area is roughly as follows:

Area	No prior to Russo-German War	No sent to the west	Present no of vehicles
Martime Krai	11,400	7,410	3,990
Raions directly subordinate to Khabarovsk Krai and Jewish Autonomous Oblast	7,800	5,460	2,340
Amur Oblast	7,700	5,390	2,310
Khabarovsk Krai	4,200	840	3,360
Chita Oblast	15,300	11,475	3,825
Buryat-Mongol ASSR	14,000	10,500	3,500
Irkutsk Oblast	17,500	13,125	4,375
Yakut ASSR	3,300	825	2,475
Total (Eastern USSR)	81,200	55,025	26,175

REMARKS:

1. Approximately 25,000 vehicles had been sent from the US to the USSR via Eastern USSR under lend-lease by October 1944, and it is presumed that the majority of these were sent to the west.

2. The number of vehicles sent west does not take account of those sent east.

(ii) Estimated distribution of civilian tractors by area is roughly as follows:

		Maritime Krai	Khabarovsk	Amur	Trans-Baikal	Total
Tracked Vehicles	No of vehicles prior to war	1500	500	2000	3000	7,000
	No of vehicles sent west	1000	300	1500	2400	5,200
	Present no of vehicles	500	200	500	600	1,800
Wheeled Vehicles	No of vehicles prior to war	2200	600	2600	5400	10,800
	No of vehicles sent west	--	--	--	1400	1,400
	Present no of vehicles	2200	600	2600	4000	9,400

b. Local Carts and Sleds

Although there is a complete lack of information on local transportation resources in Eastern USSR, an estimate of current figures may be derived by subtracting the number of carts and sleds commandeered for service on the Russo-German front from the 1938 figures. On that basis, there are approximately 250,000 (Cf note (i) below) and 120,000 sleds (Cf note (ii) below).

NOTES: (i) Estimated number of carts by area:

Area	Present Number of Carts
Maritime Krai	75,900
Khabarovsk	25,900
Amur Oblast	39,300
Trans-Baikal	115,000
Total	256,100

REMARKS: It is estimated that 10% of the carts sent to the west came from the Maritime Krai and Khabarovsk and 20% from Amur Oblast and the Trans-Baikal.

(ii) Estimated number of sleds by area:

Area	Present Number of Sleds
Maritime Krai	38,000
Khabarovsk	12,900
Amur Oblast	19,700
Trans-Baikal	57,500
Total	128,100

2. Vehicle Replacement Potential

a. Trucks

As already stated, since approximately two-thirds of the trucks maintained prior to the war were commandeered and sent to the west, a bare minimum of trucks remains at present for industrial and transportation use. Any further commandeering of trucks will hamper the industrial economy of Eastern USSR.

Although it must be remembered that some of the remaining trucks were repaired, the majority can be maintained only if they are subjected to constant and large scale repairs. (Cf note (ii) below)

In view of the above, it can be said that the commandeering of trucks in Eastern USSR has already reached its limit.

NOTES: (i) There are no automobile factories in Eastern USSR but only assembly plants which are almost inactive. Assuming that every effort were exerted after the outbreak of the Russo-German War to exploit her repair capacity to the utmost, her repair capacity would still be extremely low.

(ii) The vast majority of the vehicles in Eastern USSR were manufactured in the USSR and are of poor quality. The life of these vehicles is short, averaging approximately two years, and is dependent upon the type of vehicle and the useage it receives.

b. Tractors

Excluding the wheeled vehicles used in industry, it is estimated that there are approximately 1,800 tracked vehicles which could be commandeered.

c. Carts and Sleds

It is estimated that approximately 50% of the carts and sleds in existence (128,000 carts and 63,000 sleds) could be commandeered in wartime.

The following is an estimate by area of the numbers which could be commandeered:

Area	Carts	Sleds
Maritime Krai	37,950	19,000
Khabarovsk	12,950	6,000
Amur Oblast	19,650	9,800
Trans-Baikal	57,500	28,700
Total	128,050	63,500

III. STUDY OF LOGISTICS

(Cf Appendix Map 3, "Communication Networks of Eastern USSR and Outer Mongolia")

A. Railroads

1. Overall Condition of Railroads in Eastern USSR.

a. The railroads of Eastern USSR have gradually been developed as a result of her economic expansion and her anti-Japanese attitude. The trans-Siberian Railway is a double-track line; a branch line has been constructed to connect it with the Baikal-Amur Line and an operational line leading toward the Manchurian border.

So critical was the scarcity of labor and materiel after the outbreak of the Russo-German War that the USSR was compelled not only to discontinue all railroad construction with the exception of one section but also to take up some of the tracks already laid.

Construction work on the Baikal-Amur Railroad, which runs from Komsomolsk to Sovetskaya Gavan, was continued after the outbreak of the Russo-German War, and the line was open to traffic as of June 1945.

b. About 35% to 50% of the rolling stock maintained in Eastern USSR was transferred to Central European Russia to extend the rear supply lines on the Russo-German front and to meet pressing requirements in the reconstruction of recaptured territory. This resulted in a marked decrease in the transportation capacity of Eastern USSR. At present, there are only about 15 or 20 locomotives, and the problem of normal goods transportation is further aggravated by the increased demands for freightage caused by the large quantities of lend-lease goods landed at Vladivostok.

The following table shows the comparative pre-war and present transportation capacity of railroads in Eastern USSR.

	Pre-war Capacity	Present Capacity	% of Pre-war Capacity
Goods transported	43,000,000 metric tons	21,000,000 metric tons	49%
Locomotives	2,350	1,180	50%
Freight Cars	66,000	42,800	65%
Employees	120,700	90,500	75%

c. Since large quantities of railroad materials are required in the Ural district for the emergency construction of railroads and the reconstruction of railroads in recaptured territory, rails and other materials have been sent from Eastern USSR. It will be very difficult in the future to satisfy the demands for repair and construction material as long as the insufficiency of the iron manufacturing industry and the deficiency in supplies of steel and other materials continue.

d. New Locomotives, freight cars, etc., are manufactured mainly in the factories of Central European USSR; while Eastern USSR is mainly responsible for maintenance and repair. The following table shows the annual potential and the actual figures:

Principal Factories

Location	Locomotives		Freight Cars	
	Volume Planned	Volume Produced	Volume Planned	Volume Produced
Voroshilov	132	121	1,356	--
Mihailochyesnkovsk	Acces-sories	Mfr & Repair	1,620	1,205
Chita	258	212	69	--
Ulan Ude	562	488	12,000	8,592

NOTE: This table is based on 1938 figures.

Principal Repair Shops

Railway Bureau	Number of Installations	Accommodation Capacity	Repair Capacity
Maritime Krai	6	60	16,500
Far Eastern	7	70	25,000
Amur	10	100	41,500
Trans-Baikal	8	80	29,000
Eastern Siberia	8	80	25,000

REMARKS: (i) Normally, each shop is capable of accommodating ten 2-axle cars or six 4-axle cars.

(ii) The average annual rate of repair is 420; minor repairs, 3,600; and 120 cars for annual repair.

2. Condition of Branch Lines in Eastern USSR

The branch lines in Eastern USSR have been kept in condition for both economic and military purposes. There are more than twenty such lines linking up with the main Trans-Siberian Railway. Those lines leading towards the Soviet-Manchurian border were constructed mainly for military purposes, and the remainder, for their economic value. Table 8 which follows gives an outline of these branch lines (EdN: This table has been broken down into the following text.)

DETAILS OF SIBERIAN RAILWAY BRANCH LINES

A. Maritime Krai Railways

1. Suchan Line

This line runs from Ugolnaya to Nakhodka, a distance of approximately 171 kilometers. It is a broad-gauge, single-track railway, and recent repairs have improved its facilities.

Its speed is approximately 35 kilometers per hour. About 16 trains are used in summer, and about 15 in winter. Completed in 1907, it is of military and economic importance in the defense of the Bay of Amerika and in the development of Suchan coal mines. The Dunai and Sergeyevka lines, also of military value, branch off from this line, the latter to be extended to the Daubikhe River valley.

2. Posyet Line

This line runs from Baranovskiy to Posyet, a distance of approximately 194 kilometers. It is a broad-gauge, single-track railway, and, although in poor condition at the time of construction, continuous improvements are being made. Its speed is approximately 35 kilometers per hour. About 19 trains are used in summer, and about 18 in winter. Completed in the spring of 1940, it is of great military importance to the Posyet area. Branch lines extend to Slavyanka and Kraskino.

3. Grodekovo Line

This line runs from Voroshilov to Grodekovo, a distance of approximately 97 kilometers. It is a broad-gauge, single-track railway, and, generally speaking, is in good condition. About 19 trains are used in summer, and about 18 in winter. Completed in 1900, it connects with the HIN-SUI* (TN: probably Pinkiang-Suifenho) line in Manchuria and is of strategic military importance. A narrow-gauge, military, light railway line extends from GATIYONKI* (TN: probably Golenki) to the border area.

4. Turiy-Rog Line

This line runs from Mansovka Station to Turiy-Rog, a distance of approximately 153 kilometers. It is a broad-gauge, single-track railway, generally in good condition. About 19 trains are used in summer, and about 18 in winter. Completed in 1936, it is a military railway connecting with the Tung-an area in Manchuria.

5. Sysoyevka Line

This line runs from Mansovka Station to Varfolomeyevka, a distance of approximately 110 kilometers. It is a broad-gauge, single-track railway in good condition. About 13 trains are used in summer. Completed in the spring of 1939, it connects with the Daubikhe River valley.

B. Far Eastern Railways

1. Obor Line

This line runs from Krulikovo to East Obor, a distance of approximately 70 kilometers. It is a broad-gauge, single-track railway completed in 1933; the line east of Obor was completed in 1941. It is a forestry railway; unreliable information tells of a line extension to Sovetskaya Gavan.

2. Komsomolsk Line (Railway No 1)

This line runs from Volochayevka to Komsomolsk, a distance of approximately 355 kilometers. It is a broad-gauge, single-track railway, and, with recent repairs, its condition appears generally good. About 19 trains are used in summer and about 18 are used in winter. Incomplete in 1936 although of economic and military value, it runs along the Amur River and connects the Nikolaevsk area.

3. Leninskoye Line (Railway No 2)

This line runs from Birobidzhan to station number 130, a distance of approximately 130 kilometers. It is a broad-gauge, single-track railway, using approximately 19 trains in summer and 18 in winter. Incomplete in 1937, it is a military railway reaching the border area along the Amur River.

4. Izvestkovy Line

This line runs from Izvestkovy to URUGARU* (beyond Ust Niman), a distance of approximately 350 kilometers. A broad-gauge, single-track railway, it was completed in 1941; however, although built for the development of coal mines near URUGARU*, it seems that the rails were removed in the spring of 1943.

C. Amur Railways

1. Poyarkovo Line

This line runs from Zantaya to Poyarkovo, a distance of approximately 80 kilometers. It is a broad-gauge, single-track railway in good condition which uses about 10 trains in the summer. Completed in the spring of 1942, it is a military railway connecting the border along the Amur River.

2. Blagoveshchensk Line

This line runs from Kuybyshevka to Blagoveshchensk, a distance of about 116 kilometers. It is a broad-gauge, single-track railway in good condition, using about 20 trains in summer and 18 in winter. Completed in 1914, it is a strategic military railway connecting points along the Amur River.

3. Tambovka Line

This line runs from Berezovka to Konstantinovka, a distance of about 110 kilometers. It is a narrow-gauge (1 meter), single-track railway which uses about 4 trains in summer. Completed in 1939, it is a military railway which branches off the Blagoveshchensk line and connects with the Amur River.

4. Dzhalinda Line

This line runs from Skovorodino to Dzhalinda, a distance of approximately 68 kilometers. It is a broad-gauge, single-track railway in poor condition, using about 16 trains in summer. It

is an important railway for military and water-transportation purposes.

D. Zabaikal Railways (formerly known as Molotov Railways)

1. Tonda Line

This line runs from /the/ Baikal-Amur /Railway/ to Tonda, a distance of approximately 150 kilometers. It is a broad-gauge, single-track railway which was completed in 1938. It is a branch built from the Siberian Railway for the construction of the Baikal-Amur Railway. According to reports, transportation was recently stopped on this line.

2. Sretensk Line

This line runs from Kuenga to Sretensk, a distance of approximately 53 kilometers. It is a broad-gauge, single-track railway in generally good condition, using about 13 trains in summer. It is important to water transportation on the Amur River.

3. Manchouli Line

This line runs from TARUSUKI* to Manchouli, a distance of approximately 377 kilometers. It is a broad-gauge, single-track railway in good condition, using about 19 trains in summer and 18 in winter. Completed in 1901, it is of military importance; alterations are being made continually to make it a double-track railway.

4. TAMUSUKU* Line

This line runs from Borzya to TAMUSUKU*, a distance of approximately 570 kilometers. It is a broad-gauge railway between Borzya and CHIYOBARUZAN*, but narrow-gauge the rest of the way. The trains used between Borzya and CHIYOBARUZAN* are estimated to number 19 in summer and 18 in winter. Completed in 1941, it is of military value. Branching off the Manchouli Line and connecting with Outer Mongolia, it has a branch line, the ZUMBUROKKU*.

5. Urulyunguy Line

This line runs from Kharanor to the Urulyunguy district, a distance of approximately 180 kilometers. It is a narrow-gauge (0.7 meter) railway, using about 4 trains in summer. Completed in 1941, it is of military importance; branching off the Manchouli line it faces three border rivers.

E. Eastern Siberian Railway

Naushinski Line

This line runs from ZAUSHINSUKU* to Naushinski, a distance of approximately 250 kilometers. It is a broad-gauge, single-track railway, using about 12 trains both summer and winter. Completed in 1939, it is important for military and economic

purposes. It may have been constructed to reach Ulan Bator, capital of Outer Mongolia.

F. Baikal-Amur Railway

1. One line runs from Tayshet to Bratsk, a distance of approximately 200 kilometers. It is a broad-gauge, single-track railway completed in 1938. Part of the proposed Baikal-Amur line, it is reported to extend to Nizhne-Angarosk.

2. Another line runs from Komsomolsk to Sovetskaya Gavan, a distance of approximately 475 kilometers. It is a broad-gauge, single-track railway permitting a speed of about 13 kilometers per hour; it is expected to use 12 trains during the summer. Its completion is anticipated Aug 1945, and, when Vladivostok and the bay area become unusable in wartime, it will be important as a rear supply line to Khabarovsk via the Pacific.

F. Others

1. There is a light railway in the Maritime Krai running from Tetyukhe to the BURENNERU* mines, a distance of approximately 32 kilometers. It is a narrow-gauge, single-track line used for ore transportation.

2. Another line runs from Okha to Moskalvo, a distance of approximately 38 kilometers. It is a broad-gauge, single-track railway which, incomplete in 1931, is used for the transportation of oil near Okha.

3. There is also a line which runs from Magadan to Palatka, a distance of approximately 70 kilometers. It is a narrow-gauge, single-track railway which, although incomplete in 1941, is important for the transportation of goods.

(EdN: The material of insert table number 8 ends here.)

3. Wartime Transport Capacity of Railroads in Eastern USSR

a. The Trans-Siberian Railway

(For further details on this subject see Appendix 5 "Future Increase in the Transportation Capacity of the Siberian Railway")

The transportation capacity of the Trans-Siberian Railway from the point of view of track load is decided by conditions to the west of Karymskaya, i.e. the section between Ulan Ude and Tayshet, and in wartime by conditions between Karymskaya and Ulan Ude.

(1) Present Maximum Transport Capacity (See Table 9)

It is estimated that in peacetime the maximum number of available trains is 40 (38 in winter),

of which about 17 (15 in winter) are available for military use.

(2) Wartime Maximum Transport Capacity (See Table 10).

It is estimated that the maximum number of trains in wartime is 54 (51 in winter), of which about 39 (36 in winter) are available for military use.

(a) To convert to wartime operations, additional auxiliary equipment and locomotives will have to be supplied in greater quantities, an operation taking approximately 3 weeks. Some of this equipment has already been distributed.

(b) In view of the above figures, the annual transport capacity is estimated as shown below. Note that the loading capacity of a locomotive is assumed to be 680 metric tons. (A locomotive travelling from Central European USSR to Eastern USSR is taken as the standard.) Note also that the year is divided into two 6-month seasons, summer and winter.

1. With 54 (51 in winter) as the maximum number of locomotives available in wartime, the annual transportation capacity will amount to approximately 13,030,000 metric tons. The daily capacity will be:

Summer: approximately 36,700 metric tons
Winter: Approximately 34,700 metric tons
Daily Average: approximately 35,700 metric tons

2. With 39 (36 in winter) as the maximum number of locomotives available for military use, the annual transportation capacity will amount to approximately 9,300,000 metric tons. The daily capacity will be:

Summer: approximately 26,500 metric tons
Winter: approximately 24,500 metric tons
Daily Average: approximately 25,500 metric tons.

3. When there is a demand for increased transportation capacity, half the number of locomotives being used for normal communication purposes may be allotted for military use; approximately 46 locomotives will then be available for military use. (See Table 11) Under these conditions, the daily capacity will be:

Summer: approximately 31,280 metric tons
Winter: approximately 29,240 metric tons

NOTE: For mass troop movements, etc., it will be possible for the Red Army to avail itself of additional transport within a maximum period of 3 months when necessary.

It is estimated that the wartime capacity of the Trans-Baikal Branch Line (formerly known as the Molotov Branch Line) is about 19 trains (18 in winter). This estimate is based upon the track load capacity.

The following table gives the amount of rolling stock required for the amount of transportation given above.

Rolling Stock Required by the Army

	Locomotives Excluding Reserve Locomotives	Locomotives Including Reserve Locomotives	Freight Cars
At present	2,780 (11%)	3,920 (16%)	102,900 (16%)
In Wartime Avg	4,280 (17%)	6,040 (24%)	153,600 (25%)
In Wartime Max	4,930 (20%)	6,940 (28%)	175,100 (28%)

REMARKS: The percentage of rolling stock represents the percentage of the total in the entire USSR.

b. Branch Lines

(For further details on this subject, see Appendix 6, "Time, Steel and Labor Required for the Construction and Reconstruction of Railroads in the Event of an Invasion of Manchuria by the Soviet Army.")

Maximum Wartime Capacity of Trans-Siberian Railway Branch Lines

Name of Branch Line	Maximum No of Available Trains		Annual Transportation Capacity (metric tons)
	Effective at Present	Potentially Effective	
Suchan	16	18	2,600,000
Nan-tao	19	21	3,000,000
Grodekovo	19	21	3,000,000
Turiy Rog	19	21	3,000,000
Sysoyevka	13	15	2,200,000
Komsomolsk	19	22	4,600,000
Leninskiy	19	21	3,000,000
Poyarkovo	10	12	1,700,000
Blagoveschensk	20	23	3,300,000
Benzovka	4	-	200,000
Dzhalinda	16	18	2,600,000
Sretensk	13	14	2,000,000
Manchouli	19	21	4,200,000
Tamsog Bulag	4	-	200,000
Urlyunguy	4	-	200,000
Naushki	12	14	2,000,000
Sovetskaya Gavan	12	-	2,000,000

REMARKS: The lading capacity of each train travelling on the branch lines is as follows:

Komsomolsk Manchouli		680 metric tons
Benzovka Tamsog Bulag Urlyunguy		150 metric tons
Others	:	500 metric tons

The annual transportation capacity is reduced by 10-15 percent in winter and since this and other factors have been taken into consideration, the figures given represent an overall 20 percent deduction.

Table 9

PRESENT TRANSPORT CAPACITY

Section	Track Capacity	Max No of Serviceable Trains		No of Trains Required for Carrying Railroad Fuel to the East			No of Trains Required for Ordinary Transportation Purposes*			No of Trains to be	No of Trains Available for Military Use	
		Summer	Winter	Loaded	Empty	Total	Passenger	Freight	Total	Deducted	Summer	Winter
Vladivostok-Khabarovsk	43	38	36	0	1	1	5	10	15	16	22	20
Khabarovsk-Kuybyshevka	41	36	34	0	0	0	3	13	16	16	20	18
Kuybyshevka-Karymskaya	49	44	41	3	0	3	2	13	15	18	26	23
Karymskaya-Ulan Ude	51	45	43	3	0	3	3	12	15	18	27	25
Ulan Ude-Tayshet	45	40	38	0	0	0	3	20	23	23	17	15
Taishet-Novosibirsk	60	54	51	0	1	1	3	25	28	29	25	22
Novosibirsk-Omsk	100	80	80	0	2	2	5	28	33	35	45	45

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Table 9 (cont'd)

(i) Figures in the Column headed "Max No of Serviceable Trains" were arrived at by reducing the carrying capacities of the tracks by 10% in summer and 15% in winter.

(ii) The average speed of a military train is estimated at 22.5 km per hour.

(iii) Trains running east of Novosibirsk are of medium type, and those running west of it are of heavy type.

(iv) The figures given are those of early 1944. They should not differ too greatly from present-day figures.

Table 10

WARTIME TRANSPORT CAPACITY (NORMAL)

	Track Capacity	Max No of Serviceable Trains		No of Trains Required for Carrying Railroad Fuel to the East			No of Trains Required for Ordinary Transportation Purposes			No of Trains to be	No of Trains Available for Military Use	
		Summer	Winter	Loaded	Empty	Total	Passenger	Freight	Total	Deducted	Summer	Winter
Vladivostok-Khabarovsk	49	44	41	0	3	3	1	6	7	10	34	31
Khabarovsk-Kuybyshevka	49	44	41	0	2	2	1	5	6	8	36	33
Kuybyshevka-Karymskaya	51	45	43	8	0	8	1	5	6	14	31	29
Karymskaya-Ulan Ude	60	54	51	6	0	6	1	8	9	15	39	36
Ulan Ude-Tayshet	60	54	51	6	0	6	1	5	6	12	42	39
Tayshet-Novoshibirsk	60	54	51	4	0	4	1	5	6	10	44	41
Novosibirsk-Omsk	100	80	80	0	3	3	3	25	28	31	49	49

REMARKS: Table 10 (cont'd)

(i) Wartime auxiliary installations include 19 signal stations which have been reopened in order to subdivide the various block sections to the east of Taishet.

(ii) Medium-type engines are used for military trains. For ordinary transportation purposes, medium-type engines are used east of Ulan Ude and heavy-type engines to the west.

(iii) For further details refer to Table 9.

Table 11

MAXIMUM TRANSPORTATION CAPACITY IN CASE ORDINARY COMMUNICATION FACILITIES ARE REDUCED BY HALF IN WARTIME

	Track Capacity	Max No of Serviceable Trains		No of Trains Required for Carrying Railroad Fuel to the East			No of Trains Required for Ordinary Transportation Purposes			No of Trains to be	No of Trains Available for Military Use	
		Summer	Winter	Loaded	Empty	Total	Passenger	Freight	Total	Deducted	Summer	Winter
Vladivostok-Khabarovsk	49	44	41	0	2	2	1	3	4	6	38	35
Khabarovsk-Kuybyshevka	49	44	41	0	1	1	1	3	4	5	39	36
Kuybyshevka-Karymskaya	51	45	43	4	0	4	1	3	4	8	37	35
Karymskaya -Ulan Ude	60	54	51	3	0	3	1	4	5	8	46	43
Ulan Ude-Tayshet	60	54	51	3	0	3	1	3	4	7	47	44
Tayshet-Novosibirsk	60	54	51	2	0	2	1	3	4	6	48	45
Novosibirsk-Omsk	100	80	80	0	2	2	2	13	15	17	63	63

REMARKS: Same as Table 10.

B. Maritime Transportation

1. Present Condition of Eastern USSR Maritime Transportation

a. Shipping in East Asiatic Waters

Recently, the number of Soviet vessels in East Asiatic waters annually has been about 286 with an estimated total tonnage of approximately one million tons. Of these, about 126 are engaged in overseas trade, shipping lend-lease supplies from the US to the USSR. Their total tonnage is approximately 580,000 tons and the annual total of goods transported amounts to 1,700,000 metric tons.

There are 214 Soviet vessels of 2,000 tons or over in East Asiatic waters, with a total tonnage of about 940,000 tons, and of these about 201 (890,000 tons) can be used as freighters. The following table shows the vessels of 2,000 tons or over in East Asiatic waters:

Type of Vessels	Number	Total Tonnage
Cargo and Passenger	142	510,975
Tankers	16	117,035
Crab Fishing	9	36,787
Ice Breakers	3	13,921
Whalers	1	5,055
Undetermined Vessels	43	259,284
Total	214	943,057

b. Cargo-handling Capacity of the Principal Harbors of Eastern USSR

With the exception of Vladivostok, the harbors of Eastern USSR are by nature of little value because they are ice-bound for a long period during the winter, because the good harbors are remote, and because there are no lines of communication.

With the increase in activity due to shipments of lend-lease goods from the US since the outbreak of the Russo-German War, it became necessary to review the harbors of Eastern USSR. Particular attention must be paid to the strenuous efforts being made to increase the harbor facilities such as at Sovetskaya Gavan.

NOTE: With the completion of the section of the Baikal-Amur Railway between Sovetskaya Gavan and Komsomolsk, further expansion work on the Sovetskaya Gavan Harbor was undertaken and attention should be paid to the future value of this harbor and of Vanina Bay.

ANNUAL CARGO-HANDLING CAPACITY OF PRINCIPAL HARBORS IN EASTERN USSR

	Name of Harbor	Capacity (metric tons)			Summary
		Cargo handling onshore	Cargo handling offshore	Total	
Southern Coastal Area	Vladivostok	6,500,000	-	6,500,000	1. Existing facilities, with no improvements, permit handling of about 3,000,000 metric tons of cargo. 2. Affords connection with Trans-Siberian Railway.
	Nakhodka	480,000	280,000	780,000	The Suchan Branch Line passes through Nakhodka and connects with the Trans-Siberian Railway
	Olga	280,000	-	280,000	The Trans-Sikhote Alin Road and the Sysoyevka Branch Line run through Olga and connect with the Trans-Siberian Railway
Mouth of Amur River Area	*Sovetskaya Gavan	500,000	280,000	780,000	1. Connections with the Komsomolsk Branch Line are afforded by the contemplated line of the Baikal Amur Railway between Sovetskaya Gavan and Komsomolsk (if it has been constructed) and/or by the automobile road. 2. The facilities are capable of being greatly enlarged
	*Dekastri	90,000	-	90,000	Connections with the Komsomolsk Branch Line are are afforded by a highway.
	*Nikolaevsk	660,000	160,000	820,000	In addition to having connections with Komsomolsk by Amur River water transport, there are direct connections with Khabarovsk by water.
Sakhun Area	Aleksandrovsk	-	750,000	750,000	

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	Name of Harbor	Capacity (metric tons) Cargo handling onshore	Cargo handling offshore	Total	Summary
Arctic Ocean Area	Okhotsk Area				
	Ayan	-	30,000	30,000	
	Okhotsk	-	80,000	80,000	
	Nagayevo	330,000	170,000	500,000	
	Kamchatka Area				
	Petropavolovsk	480,000	800,000	1,280,000	
	Anadyr	-	-	-	
	Provideniya	-	200,000	200,000	
	Ambarchik	-	180,000	180,000	
	*Tiksi	-	480,000	480,000	This serves as the connecting port for Lena River traffic, and connects with the Soviet-Manchurian border via the Yakutsk-Tynda highway.
	Total			12,730,000	

NOTE: 1. Cargo-handling capacity is the maximum capacity, assuming full development of facilities and maximum number of workers, especially in the case of cargo-handling offshore, with the greatest possible use of lighters, etc.

2.* Ports which play a significant wartime role in receiving supplies for Eastern USSR.

2. Maritime Transportation in Eastern USSR during Wartime

Conditions of maritime transportation in wartime will vary with the strategic situation and will be especially dependent upon whoever possesses mastery of the sea and air in the northwestern region. It will be impossible to use the ports in the southern section of the Maritime Krai (Vladivostok, Tetyukhe, etc) for traffic between the US and the USSR, and it is believed that the USSR intends to use instead the ports of the lower Amur Oblast (Nikolaevsk, Dekastri, Sovetskaya Gavan, etc). In this case, the maximum annual supply potential of Eastern USSR by sea will be mainly dependent upon the cargo handling capacity of these ports and is estimated at approximately two million metric tons.

NOTE: After the cargo has been unloaded at ports mentioned above, it can be shipped to the Komsomolsk-Khabarovsk area by water up the Amur River; by highway along the Sovetskaya Gavan-Komsomolsk Railway; and then by the Komsomolsk Branch Line. Alternatively, it may be shipped from Petropavlovsk and Nagaevo to the Komsomolsk-Khabarovsk area by small ocean-going vessels.

The basis for the foregoing estimate of the maximum annual supply potential is as follows:

Annual Transportation Capacity of Ocean-Going Soviet Shipping in Service in Eastern USSR Waters

(1) There are about 200 vessels of 2,000 tons and above (about 890,000 metric tons) which are capable of ocean voyages. They are of the following types:

Cargo Vessels	510,795 tons	(142 ships)
Tankers	117,035 tons	(16 ships)
Unknown types	259,284 tons	(43 ships)

(2) If 20 percent of the above is deducted for vessels 30 years old or over, there remains approximately 710,000 tons of shipping (gross tonnage). As deadweight tonnage is approximately 1.4 times gross tonnage, the deadweight tonnage amounts to approximately 1,000,000 tons.

(3) With vessels making three crossings per year, approximately 3,000,000 tons can be shipped.

(4) However, if it is assumed that the freight deadweight tonnage is the equivalent of 80 percent of the deadweight tonnage, the annual transportation capacity will be approximately 2,400,000 tons.

b. Cargo Handling Capacity of Ports

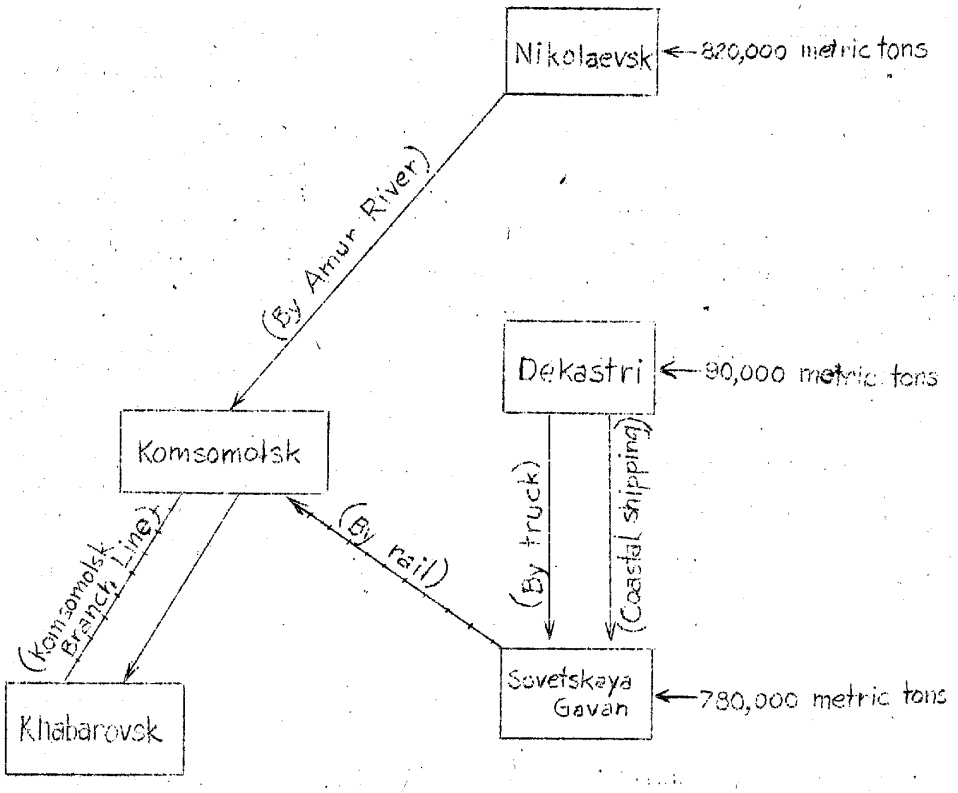
The factor liable to have the greatest effect upon transportation capacity in this area is the ability of ports to handle cargo. The maximum cargo handling capacity is estimated at

approximately 1,700,000 metric tons.

Port	Maximum Annual Capacity (10,000 metric tons)	Notes
Nikolaevsk	820,000	These figures assume the utilization of present harbor facilities and include increases in the numbers of lighters and longshoremen.
Dekastri	90,000	
Sovetskaya Gavan	780,000	
TOTAL	1,690,000	

Cargo unloaded at the three ports above is shipped to the Komsomolsk-Khabarovsk area by the routes illustrated below. No bottlenecks occur in transporting goods via the Amur River, the Komsomolsk Branch Line, and the Sovetskaya Gavan-Komsomolsk Railway.

Goods unloaded at Dekastri (approximately 90,000 tons annually) can be shipped to Sovetskaya Gavan by truck; the number of vehicles required is very small.



NOTE: The present annual maximum transportation capacity of vessels engaged in the Amur River traffic (Nikolaevsk-Komsomolsk-Khabarovsk) is approximately 1,580,000 metric tons; that of the Komsomolsk Branch Line is approximately 4,600,000 metric tons; and that of the Sovetskaya Gavan-Komsomolsk Railway is 2,000,000 metric tons.

Goods for transportation from Petropavlovsk and Nagayevo may be shipped to Komsomolsk and Khabarovsk in approximately 20 ocean-going vessels of the 1,000 to 2,000-ton class (about one-half of the estimated 40 in Eastern USSR waters). These small ships are capable of navigating as far as Khabarovsk and represent an annual capacity of about 250,000 metric tons.

It is therefore possible to handle a total of approximately 1,950,000 metric tons annually (1,700,000 plus 250,000) at the ports in the lower Amur Oblast.

NOTE: In the event it becomes impossible during wartime to utilize the ports of the southern Maritime Krai, the maximum amount which could be transported by the present shipping of Eastern USSR is estimated at approximately 2,500,000 tons, as previously stated.

C. Water Transportation

1. Present Condition of Water Transportation in Eastern USSR

a. Condition of Shipping on Eastern USSR Rivers

There are approximately 1,160 vessels of all sizes on the rivers of Eastern USSR of which those on the Amur River (43%) and the Upper Lena River (44%) constitute almost 90%. About 30%, however, of the shipping in Eastern USSR is obsolete (i.e., 20 years old or over). The vessels, moreover, are of all types.

The number of vessels on the principal rivers is as follows:

	Cargo and Passenger Vessels	Tow-Boats	Cargo Lighters	Lighters (Oil Tankers)	Total
Amur River	29	154	280	46	509
Angara River	4	15	21	3	43
Selenga River	1	21	47	3	72
Lena Upper River	6	101	273	2	382
Lena Lower River	-	10	50	-	60
Kolyma River	-	11	30	-	41
Others	2	15	33	-	50
Total	42	327	734	54	1157

NOTE: (i) Small ocean-going vessels can navigate the Amur River but none are included in this table.
(ii) The Lena River divides into the Upper and Lower [branches] at Yakutsk.

b. Condition of Freight Transportation

Eastern USSR is extremely dependent upon river traffic for the transportation of materials required for her industrial development since overland transportation has not been adequately developed. With the exception of the Amur, nearly all the rivers of Eastern USSR flow through undeveloped, intemperate country of very little industrial or economic value. Recently, however, the volume of goods transported on the principal rivers has reached about 3,700,000 metric tons annually, thereby augmenting the lack of overland transportation facilities.

Freight transportation on the principal rivers is as follows:

River	Amount Transported (metric tons)	Notes
Amur River	2,200,000	1. Goods mainly transported lumber, petroleum, coal, grain and fish
Lena River	650,000	
Kolyma River	100,000	
Indigirka River	20,000	2. These figures are from actual statistics for 1943.
Selenga River	750,000	
Total	3,720,000	

2. Military Significance of Eastern USSR Rivers

a. Amur River

The Amur River possesses high military value both in war and peace as a supplementary line of communications to the Trans-Siberian Railway and as a route connecting the principal regions of Eastern USSR. It would be especially valuable in wartime when it would serve as an operational route and as a line of communications. As already stated, the section between Nikolaevsk and Khabarovsk serves as a supply route for lend-lease goods from the US.

The following is a rough estimate of the transportation capacity of the Amur River with the present shipping capacities.

Route	Capacity (approx metric tons)
Nikolaevsk - Komsomolsk - Khabarovsk	1,880,000
Khabarovsk - Blagoveschensk - Svobodny	430,000
Nikolaevsk - Svobodny through traffic	1,080,000

b. Kolyma River

The Kolyma River is the shortest route from the Arctic Ocean to the Sea of Okhotsk. With the motor highway from Nagayeva to Seimchan, it constitutes the supply route from the north to the Sea of Okhotsk. With present shipping, the transportation capacity between Ambarchik and Seimchan does not exceed 250,000 metric tons because of the irregularity of the air service between Zyryanka and Seimchan. Although it is planned to develop shipping

and other facilities, the transportation capacity is still restricted by the cargo handling capacity of Ambarchik (180,000 metric tons annually) and is not likely to exceed 180,000 metric tons annually. In addition to its poor location, its value as a supply route in time of war is not particularly great.

c. Lena River

The Lena River is an important transportation route linking the Arctic Ocean and the area along the Trans-Siberian Railway and is of extreme value as a rear supply route from the Arctic Ocean to the region along the Manchurian-USSR border. With present shipping, it is estimated that approximately 590,000 metric tons can be transported annually between Tiksi and Yakutsk, and Ust Kut and Yakutsk.

NOTE: For details see III, C, 3 below, "Wartime Transportation Capacity of Eastern USSR Watherways."

d. Other Rivers

(1) Selenga River

This river constitutes a line of communications between the area along the Siberian Railway and the Kiachta area of Outer Mongolia, but its value has decreased with the completion of the Naushki Branch Line. It may serve, however, in wartime as a supplementary line of communications to this branch line.

(2) Angara River

The section of this river between Irkutsk and Bratsk (650 kilometers) along with the motor highway Ust Kut and Bratsk along the upper reaches of the Lena serves as a supplementary supply route to Eastern USSR from the Trans-Baikal zone.

3. Wartime Transportation Capacity of Eastern USSR Waterways

(The importance of the Amur and Lena Rivers as wartime supply routes for Eastern USSR has already been discussed. As the transportation capacity of the Amur River has already been discussed in detail in a previous section, the following will deal only with that of the Lena River.)

Although the use of water transportation on the Lena River varies with circumstances, goods are normally transported to the Amur Oblast by truck and the Tynda branch line after they have been shipped to Yakutsk from the Tiksi (on the Arctic Ocean) and Taishet (on the Siberian Railway) areas. The wartime transportation capacity is therefore restricted by river shipping facilities and the cargo handling capacity of the river ports and is estimated at 500,000 metric tons.

Approximately 18,000 trucks would be required to handle this volume, hauling goods principally between Yakutsk and Tynda.

The basis for the above estimate of wartime transportation capacity is roughly as follows:

a. The transportation capacity of the Lena River from its mouth to Yakutsk is limited by the cargo handling capacity of Tiksi on the Arctic Ocean, approximately 480,000 metric tons.

b. The annual transportation capacity from western Trans-Baikal to Yakutsk (by rail from Taishet to Ust Kut and from there by the Lena River to Yakutsk) should be 107,000 metric tons.

c. From the above, the amount accumulated annually in Yakutsk is approximately 587,000 metric tons, but only 510,000 tons of this remain to meet the military requirements after 77,000 tons have been deducted to meet the needs of the inhabitants of the Yakut ASSR.

Goods are transported by truck from Yakutsk to Tynda from there to areas along the Siberian Railway by the Tynda Branch Line.

NOTE: Approximately 17,900 trucks will be required to transport the estimated 510,000 metric tons of goods accumulated at Yakutsk via the Yakutsk-Tynda highway, a journey of approximately 950 kilometers. The transportation of goods to Eastern USSR by the Lena River route is more trouble than it is worth. In wartime there is comparatively little probability of utilizing the major supply routes for Eastern USSR as the main emphasis will be laid upon the transportation of rear supplies for the Northern Air Route between USSR and the US and to satisfy the needs of the people of the Yakutsk area.

D. Air Transportation

1. Present Status of the US-USSR Northern Air Route

(For rear supplies of fuel, etc., see Appendix Table 4, "Table of US-USSR Northern Air Rear Supply Routes")

The US-USSR Northern Air Route starts from Fairbanks, Alaska and passes through Velkal, Seimchan and Yakutsk, etc., in Eastern USSR. It extends as far as Krasnoyarsk in central USSR and is, in all, 6,500 kilometers long. At present it is mainly of importance as an air transport line for the planes which are ferried along it, but it is also utilized for the transportation of extremely small quantities of general freight and as a line of communications for US and USSR dignitaries.

a. Number of Planes Imported by the USSR

To meet the demands of the Russo-German War, 5,176 military planes (5,530, including certain undetermined types) and 540 transport aircraft were imported by the USSR during the two year period from the opening of this air route early in 1943 until the end of 1944. Although the average ferrying rate per month reached 240, this rate appeared to decrease after the latter half of 1944 with the increase in the USSR's aircraft production and the improvement in the situation of the Russo-German War.

b. Transportation of General Freight

General freight is being transported by approximately 100 C-47s, but the amount transported is insignificant, and does not exceed 150 metric tons per month. The freight consists mainly of airplane parts and the remainder of light goods such as mail, books, etc.

c. Fuel Supply

It appears that the western section of this air route, that based at Yakutsk, is supplied with fuel mainly from Tiksi and the Trans-Baikal areas via the Lena River and in part via the Tynda Branch Line and the highway from Tynda to Yakutsk. The eastern section is supplied directly from lend-lease vessels, via the Magadan - Nagayevo highway, and in part from supplies transported on the air route itself.

2. Bottlenecks in the US - USSR Northern Air Route

a. Rear Supply of Fuel

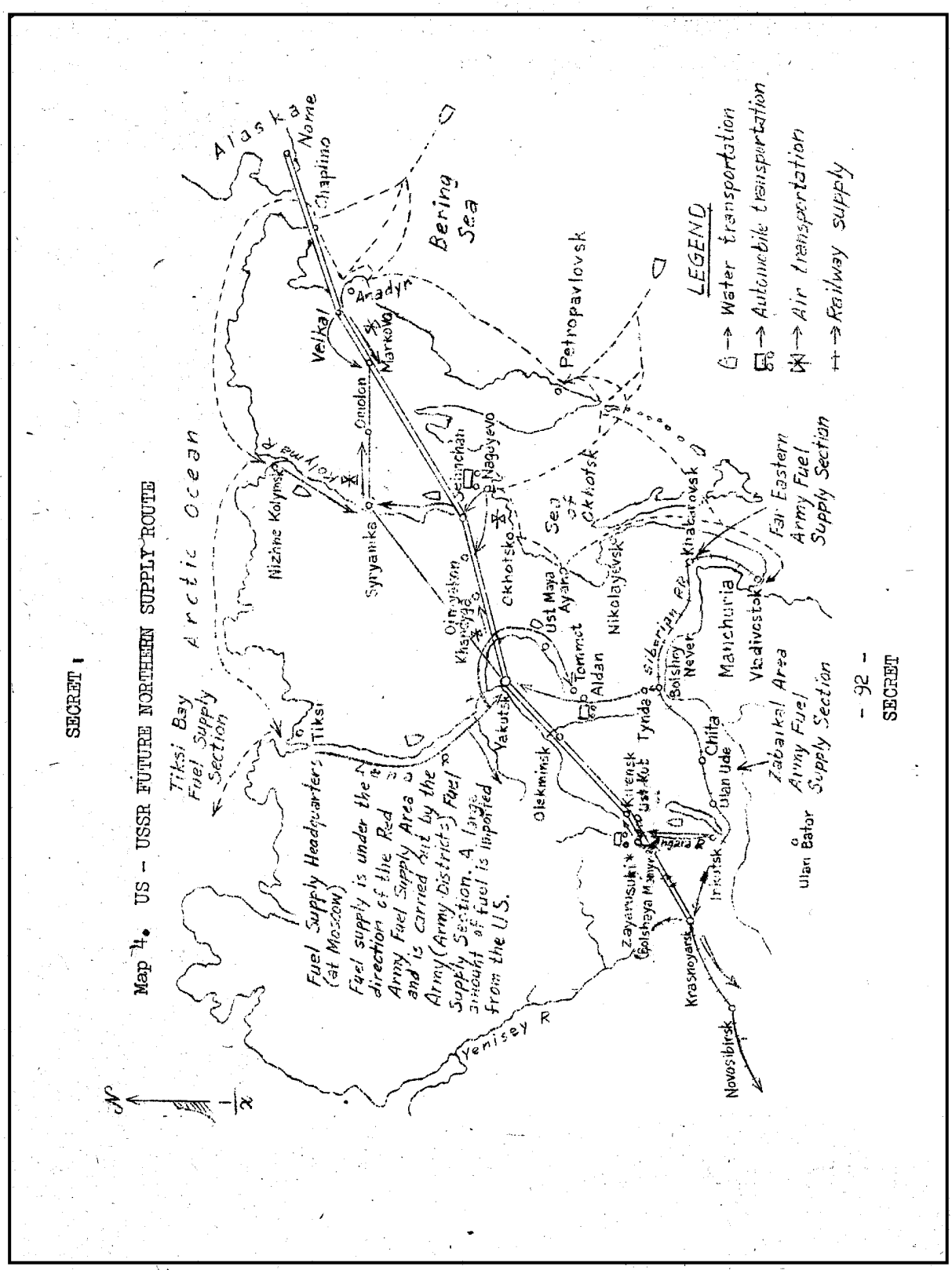
As the air route passes through extreme latitudes which are very cold, are undeveloped, and have poor communications, it can be presumed that the principal bottleneck will occur in supplying fuel. That is, the entire problem of the rear supply of fuel on this air route is entirely dependent upon long-distance transportation which is carried out mainly in the summer.

b. Air Route Installations

With gradual extension of the air route installations, it will be possible to handle approximately 300 aircraft monthly, but bottlenecks will arise, especially in the repair installations, with the increase in the amount transported.

c. Meteorological Conditions

Weather on this air route is generally suitable for flying. From the air transportation records for 1943, it appears that flying is possible throughout the years, and conditions are especially favorable during the first six months.



The bottleneck from the meteorological standpoint occurs between Nome in Alaska and Velkal in the Bering Sea Area. Flying appears to be possible for about half the year over this area.

The melting of snow and ice in the spring seems to cause considerable hindrance in the use of airfields. Prior to the thaw, high, dry sites are chosen outside the winter taxiing areas, as proposed spring and summer taxiing areas. These areas are cleared of snow, drainage facilities installed, and the areas put into service as soon as the thaw takes place.

3. Wartime Value and Use of the US - USSR Air Route in the North Pacific

a. General Observations

Because of the development of the northern region since the outbreak of World War II, the establishment of a line of communications with the US and the demands of a war against Japan, both countries have striven to service this air route which is vital to communications between the US and the USSR over the North Pacific Ocean. In addition to the Bering Strait route, there are two alternative routes by which lend-lease aircraft from the US could be forried in wartime: one via the Arctic Ocean coast line, the other via the Aleutian Islands.

(1) Alaska - Arctic Coastline of Eastern USSR - Yakutsk Route

(The Nome - Uelen - Mys Schmidt (North Cape) - Nizhne Kolymsk - Yakutsk (Tiksi - Bulun - Zhigansk - Yakutsk) will henceforth link up with the Northern Route)

Hitherto, there has been an air service of the Arctic Airways along the Arctic coast. Because of inadequate airfield installations, problems of rear supply, and the fact that it is an indirect route of supply for Eastern USSR this line, which forms a section of the air route previously mentioned, is not being used at present. The Russians are afraid that the US - USSR Northern Air Route via the Bering Straits may be disrupted as a result of Japanese operations, in which event it is extremely likely that this Arctic route will be used as an emergency route. With present facilities, only the use of sea planes is possible for the most part.

(2) US-USSR Northern Air Route via the Bering Strait (in present use)

NOTE: For research purposes, this line will be referred to as the "Northern Route."

This route links the American and Eurasian continents by way of the Bering Straits. In addition to the fact that land bases can be established at points along this route, meteorological conditions are ideal for flying, except in one area. With the recent progress in the servicing of installations, flying has been possible throughout the year. The distance between the US and the USSR is particularly short via Eastern USSR and because the route is located outside the Japanese sphere of influence, there is little fear of its being disrupted or attacked. For these reasons, this route is extremely important as it will not only constitute first-line bases in operations against Japan but will also constitute a rear line of communications. The major weakness of this route lies in the lack of communications to these bases and the great difficulties of rear supply. Moreover, only land planes can be used on this route.

(3) Alaska - Aleutian Islands - Nikolaevsk (Komsomolsk) Route.

(Seattle - Sitka - Kodiak - Dutch Harbor - Petropavlovsk - Nikolaevsk or Komsomolsk route)

NOTE: For research purposes, this route will be referred to as the "Southern Route."

This route is at present being used along most of its length by the American Army in its operations against Japan. It is not being used for ferrying lend-lease aircraft to the USSR because of the effect this might have on Russo-Japanese relations and because of the unfavorable weather conditions encountered.

Although this is the shortest route from the US to the air bases along the Russo-Manchurian border, it presents two obstacles in the Bering and Okhotsk Seas, which cause considerable difficulties, especially for light aircraft.

The majority of the installations on the American-owned Aleutian Islands have been serviced; consequently, there are no difficulties of rear supply. With the increase in the number of airfields around Petropavlovsk and Komsomolsk, this route is of great strategic importance as an operational and as a rear supply route in wartime. Moreover, both land and sea planes can use this route.

(4) In addition to the main routes mentioned above, there are numerous subsidiary lines linking up these main lines with the strategic areas of Eastern USSR.

Although the facts regarding these routes are believed to be accurate, the two vital routes linking the US and the USSR are still the Northern and the Southern Routes.

b. Value and Utilization in Wartime

In wartime, these aforementioned routes are not only used as lines of communication and as supply routes, but also constitute strategic routes for American and Russians operations from the north against Japan. The value and utilization of these routes is greatly affected by the degree of cooperation between the US and the USSR on the use of these bases and by general conditions, particularly by those along the sea route between the US and the USSR, which is bound up with the status of Japanese operations in the north. These routes are utilized as follows: (1) As an invasion route for the American Air Force to Eastern USSR bases and as a rear supply route for the invasion air force. (2) As rear air bases for the Soviet Air Force and as a transportation route for lend-lease supplies. (3) As a line of communications between the US and the USSR.

(1) As an Invasion Route for the American Air Force to Eastern USSR Bases and as a Rear Supply Route for the invasion air force

(a) Both the northern and southern routes can be used for this purpose. The northern route is suitable for secret mobilization while few of the bases on the southern route can be used on the Russian side.

In view of the fact that in wartime the northern route is likely to be used as a transportation route for lend-lease supplies to the USSR, the southern route should be used for invasion and supply. Moreover, from the standpoint of meteorological conditions, the northern route should be used during the first half of the year and the southern the latter half.

In order that this route may be used by the American Air Force, ground crews will have to be stationed and fuel dumps, etc., distributed at intermediate bases. For use by B-29s etc., further airfield installations, particularly runways, will have to be constructed.

NOTE: The fuel and materials used on the northern route are mainly American products, and the fact that these items are easily available for transfer to the American Air Force warrants close attention.

(b) When the northern route is used as a rear supply route for the American Air Forces, the amount of lend-lease supplies transported over this route is calculated to decrease. It will, however, be possible to handle most of the supplies on the subsidiary routes. For instance, the Anchorage - Nome - Anadyr - Markovo - Magadan - Nikolaevsk - Komsomolsk route will be used, resulting in the multiple use of Nome and Markovo.

(2) As a Transportation Route for Lend-lease Supplies

In view of the fact that in wartime the southern route becomes the American operational route against Japan, there are strong indications that the northern route will be used as the transportation route for lend-lease supplies to the USSR and that it will be converted mainly into a supply route for Eastern USSR. However, because the distance from the southern route to the strategic areas of Eastern USSR is comparatively short, it can be used at all times no matter whether American operations are being carried on against Japan or not. It could also be used as a temporary supply route for Eastern USSR depending on whether American operations were being carried on against Japan or not.

(a) Survey of Goods which could be Transported By air if Northern Route were Converted into Eastern USSR Supply Route

In view of the comparative efficiency of air and sea transportation, it is estimated that mainly aircraft and aircraft parts, and no general munitions will be transported by air, as was the case on the India-China run. It is anticipated that the sea line of communications between the US and the USSR and the Trans-Siberian Railway will be kept open, even in wartime.

Although at present the bulk of the lend-lease aircraft from the US are fighters, in wartime, it is anticipated that the emphasis will be laid on transport aircraft and bombers, especially heavy bombers, depending upon the status of USSR aircraft production

and upon the requirements of air operations on the continental front.

In the above circumstances, it will be difficult to continue the policy of not transporting general munitions by air on a temporary emergency or on a semi-permanent basis.

1. Semi-permanent Basis

In the event the North Pacific line of communications were partially severed and the Siberian Railway were cut, resulting in the isolation of the vital operational zones of Eastern USSR (chiefly the area along the Russo-Manchurian border):

Since conditions along the sea line of communications between the US and the USSR via the North Pacific Ocean are affected by Japanese operations towards the north, conditions may arise which necessitate goods unloaded at the west-coast ports of the Bering Sea (e.g., Petropavlovsk, Anadyr and Volkal) being transported by air---in the event the sea line of communications via Vladivostok and the lower reaches of the Amur River were blockaded.

The most probable direction for the transportation route is along the Russo-Manchurian border to the east of Heilungkiang Province.

These conditions are expected to arise, especially in view of the rear supply of the American Air Force stationed in Eastern USSR.

Although the Red Army may lose the Vladivostok route in wartime, it is self-evident that they will strive to maintain the sea route via the lower Amur River. It is very probable that they will launch an attack upon the Kurile Islands and southern Sakhalin to achieve this.

The construction of the Sovetskaya Gavan - Komsomolsk section of the Trans-Baikal - Amur Railway is in itself an indication of their intention to follow this plan.

2. Temporary Emergency Basis

In the event vital strategic positions were isolated or an increase in emergency supplies were planned:

If, for example, Petropavlovsk Harbor in southern Kamchatka or Nagayevo and Okhotsk, vital ports on the northern coast of the Okhotsk Sea, were to become isolated and, if it were intended to intensify the offensive against certain areas in order to preserve the security of these ports, supplies could be brought from outside, especially from the US by air.

This situation may arise in the northeast, especially in southern Kamchatka, along the Okhotsk Sea coast and in Northern Sakhalin.

(b) Even in the event the North Pacific line of communications were completely severed in wartime, it is very improbable that the Northern Air Route would be entirely turned over to the transportation of general munitions, because the lend-lease transportation routes through north and central Europe would still be kept open.

NOTE: The questions of whether or not, in view of present conditions, any change will take place in the sea line of communications between the US and the USSR after the Soviet victory over Germany, and what change would take place in the type of lend-lease supplies arriving via Eastern USSR are both worthy of study.

(3) As a Line of Communications between the US and the USSR

Both southern and northern routes can be used for this purpose, but the northern route is generally considered more favorable in view of its degree of safety.

4. Wartime Transportation Capacity of the US - USSR Northern Air Route and Other Air Routes

(For detailed information, see Appendix 7, "Calculation of Wartime Transportation Capacity of the US - USSR Northern Air Route and Other Air Routes" and Appendix 5, "Chart of Air Transporation Routes")

Although American lend-lease munitions are sent by air in wartime, the amount varies according to circumstances. The following estimates have been drawn up for the purposes of this survey:

It will be assumed that 1,000 heavy aircraft (500 in peacetime) will be used on each of the following air routes in wartime for the transportation of supplies from the US to Eastern USSR:

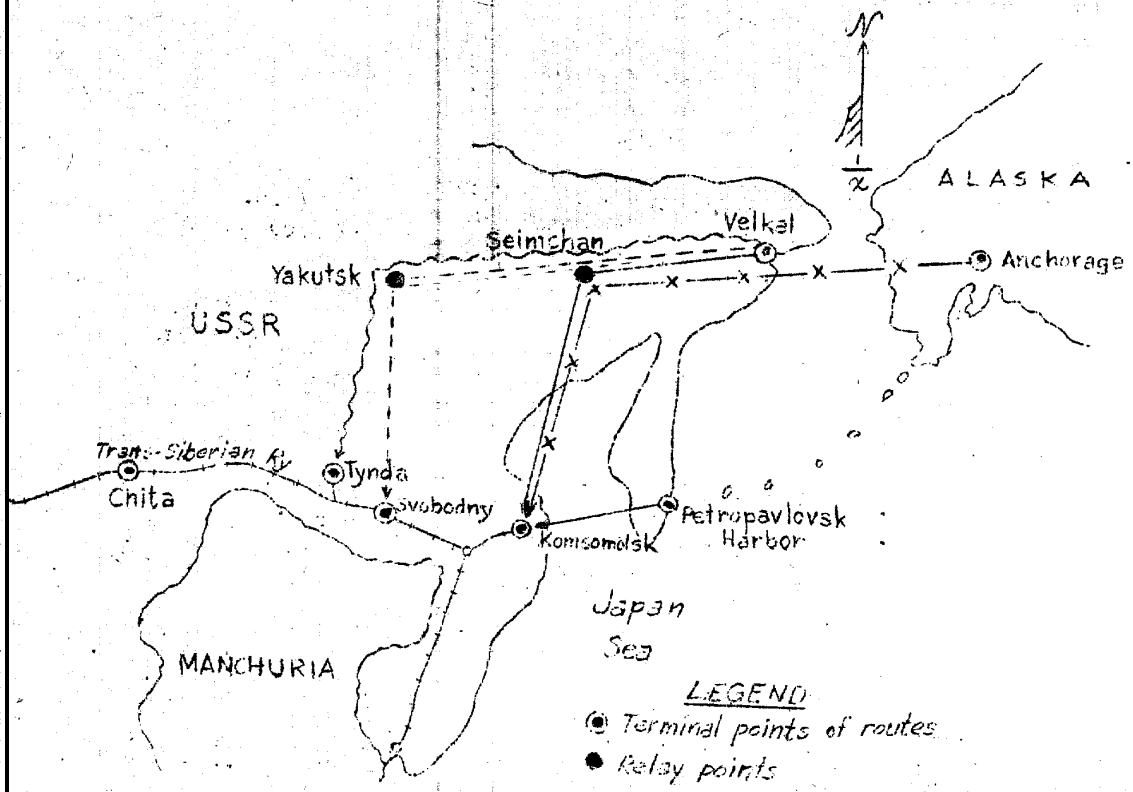
a. Velkal - Seimchan - Komsomolsk route
b. Velkal - Seimchan - Yakutsk - Svobodny route
c. Velkal - Seimchan - Yakutsk - Tynda route
d. Petropavlovsk Harbor - Komsomolsk route
e. Anchorage (Alaska) - Velkal - Seimchan - Komsomolsk route

Assuming that 1,000 aircraft are used in transportation of supplies from the US to Eastern USSR, and taking into consideration distance and the number of flights which can be made, the annual transportation capacity ranges from 100,000 to 260,000 metric tons. The comparative figures for the various routes are as follows: (In Metric Tons)

	Transportation Capacity	
	Annual	Monthly
a.	163,400	13,600
b.	112,300	9,300
c.	133,800	11,100
d.	259,600	21,600
e.	106,700	8,800

Approximately 2,200 aircraft will be required annually as replacements for these air routes, and approximately 650,000 metric tons of fuel (including reserves).

Map 5. AIR TRANSPORTATION



Routes	Distance (km)	Transportation Capacity per Yr (10,000 mt)	Fuel Requirements per Yr (10,000 mt)	Note
A Velkal - Komsomolsk	2,700	16.5	42.5	The figures on transportation capacities are to the nearest tenth.
B Velkal - Svobodny	4,030	11.2	44.0	
C Velkal - Tynda	3,330	13.4	43.5	
D Petropavlovsk Harbor -- Komsomolsk	1,760	26.0	42.3	
E Anchorage - Komsomolsk	4,360	10.7	43.3	

IV. STRENGTH AND WEAKNESS OF EASTERN USSR FROM STANDPOINT OF REAR PREPARATIONS

The relative weakness of Eastern USSR from the standpoint of rear preparations depends upon the defensive and offensive operations of the Red and Japanese Armies, but only a general discussion of the topic is given in this survey.

A. Weakness

Although the following are weaknesses of Eastern USSR, they are of little account unless Japan has a considerable offensive force ranged against her.

1. Because of the sparsity of population in Eastern USSR and her lack of economic independence, there are many weaknesses, the most important being her inability to prosecute an effective offensive against Japan.

At present, the only items in which Eastern USSR is self-sufficient are fish and coal. For food, fuel, industrial raw materials, manufactured goods, etc., she is entirely dependent upon imports and is, at present, mainly relying upon lend-lease supplies from the US arriving via Eastern USSR ports.

Deficiencies in the munitions industry have existed since the outbreak of the Russo-German War. With the single exception of the aircraft industry which has advanced slightly, there has been a general lack of raw materials, especially evident in the inadequacy of iron-manufacturing and machine industries. There is little posibility of any future development or expansion of these industries.

NOTE: However, if labor and capital are invested in the exploitation of the abundant natural resources of Eastern USSR, there is a reasonable possibility of future development in time.

2. Lack of Strategic and Tactical Depth for Defense

a. Because of the distribution of population in Eastern USSR and the location of vital industrial belts and munitions storage depots, the principal rear bases are located mainly in the area adjoining the Russo-Manchurian border (along the Trans-Siberian Railway), which is within range of the combined Japanese fighter and bomber units. From the standpoint of ground operations, they are also well within striking distance of the Japanese Army units, particularly in the area east of Heilungkiang Province.

b. The Trans-Siberian Railway which constitutes the supply artery for Eastern USSR follows the Russo-Manchurian border and may be cut with comparative ease by the Japanese in either ground or air operations.

NOTE: (i) The depth of the airfields in the Voroshilov Plain area is less than one half that laid down by the Red Army as the general basic depth.

(ii) The USSR has dispersed her heavy industries and munitions storage depots, relocating them in the interior, has moved airfields to the rear, and has strengthened her fortifications as part of her plan to increase the depth for defense. This tendency has been especially marked since the outbreak of the Russo-German War.

3. Not only are communications within Eastern USSR poor, but so many weaknesses exist in the communication system with Eastern USSR, that there is a great danger of its becoming isolated, especially in wartime.

a. Communications within Eastern USSR are very poor, except in the area along the national border.

b. The Trans-Siberian Railway, which is the only overland supply route linking central Europe and Eastern USSR, is a considerable distance from the main centers of the munitions industry, while the transportation capacity of the sea supply route between the US and the USSR varies with the number of vessels available and the cargo handling capacity of the ports. Moreover, both routes are liable to be cut in wartime or, at least, threatened, depending upon the situation.

NOTE: The distance over which munitions, etc., have to be transported to Eastern USSR has been vastly improved over the prewar conditions by transferring the centers of heavy industry to the Urals-Kuznetsk Basin area after the outbreak of the Russo-German War.

4. Rear preparations in the western section of Manchuria (the area along the Trans-Baikal Branch Line and the eastern section of Outer Mongolia) are not sufficiently advanced at present to make possible an attack on Manchuria with a large military force.

This area possesses the most favorable strategic frontage for an attack by the Red Army on Manchuria, but no attack is possible at present in view of the status of rear preparations.

NOTE: Any future reinforcement, however, warrants attention.

The lack of rear military reserves of the Red Army in Eastern USSR and of surplus vehicles which may be commandeered for rear supply constitutes a major limiting factor in the prosecution of an offensive against Japan with the military forces present, stationed in Eastern USSR.

B. Strength

Although the strong points are few, they are as follows:

1. Because Eastern USSR is much nearer the US than European USSR, by utilizing the lend-lease supplies which she is able to receive even in wartime, she can prosecute an offensive to greater advantage.

NOTE: However, it may be that the maritime line of communications between the US and the USSR will be severed with changes in wartime operations.

2. Use of Northern Air Route via Bering Straits

As this route is at a distance from the Japanese sphere of influence, there is little possibility of its being cut in wartime, and it will be possible to use it to advantage as a supply route for Eastern USSR.

3. Establishment of Wartime Status for Rear Installations

The fact that the USSR took advance measures to govern communications, munitions storage depots, and the aerial defense of vital areas may be considered a strong point, if only in a negative sense.

This tendency has been especially marked since the outbreak of the Russo-German War.

Section 3. STUDY OF SUPPLIES AVAILABLE TO EASTERN USSR IN THE EVENT OF A WAR WITH JAPAN

(See Appendix 2, "Calculation of Wartime Requirements" for further details.)

The wartime requirements will be increased or decreased in accordance with the Red Army's operational plan and scale of operations and with the ability of Japan to repel the attacks of the USSR, as previously stated. The supplies required by Eastern USSR will not only be largely dependent upon her prewar operational preparations, especially upon the amount of munitions in storage, but will also vary considerably with the rear operational potential in Eastern USSR and the amount of local resources available.

In the event of a war with Japan, the wartime requirements for the first year of war and the responsibility of the rear operational potential will serve as a basis for the supplies to be sent to Eastern USSR to satisfy the requirements of the military units involved. The amount of supplies required will be roughly shown in Tables 13-16.

Table 13

TABLE OF WARTIME YEARLY DEMAND (LOSSES) AND SUPPLY (REPLACEMENTS) IN EASTERN USSR (ON THE BASIS OF APPROXIMATELY 60 RIFLE DIVISIONS)

	Losses	Replacements possible in Eastern USSR	Self Sufficiency (%)	Replacements needed from outside Eastern USSR
Men	1,050,000	—	0	1,050,000
Horses	230,000	—	0	230,000

Principal Provisions and Forage	Supplies (m t) Military Needs	Supplies (m t) Civilian Needs	Possible Eastern USSR Supply (m t) Total	Production	Stock pile	Total	Self Sufficiency (%)	Supply needed from outside Eastern USSR (m t)
Bread Grain	630,000	1,150,000	1,780,000	860,000	250,000	1,110,000	62 (48)	670,000 (920,000) (92.0)
Meat	146,000	110,000	256,000	220,000	60,000	282,000 [sic]	110 (85)	
Fats	29,000	-	29,000	-	-	-	0	29,000
Vegetables	480,000	1,230,000	1,710,000	1,350,000	-	1,350,000	78.0	-
o Sugar	23,000	24,000	47,000	9,000	10,000	19,000	40 (19)	28,000 (38,000)
o Salt	20,000	189,000	209,000	115,000	8,000	123,000	58 (55)	86,000 (94,000)
Forage Grain	450,000	300,000	750,000	460,000	320,000	780,000	104 (61)	(290,000)
Hay	490,000	-	490,000	2,000,000	-	2,000,000	408	---
o Liquid Fuel	3,440,000	690,000	4,130,000	650,000	1,300,000	1,950,000	47 (15)	2,180,000 (3,480,000)

Table 13 (contd)

SECRET

Weapons & Ammunition	Airplanes	6,750	4,800	71	1,950
	Tanks	4,200	900	21	3,300
	Armored Cars	360	360	100	-
	Motor Trucks	156,000	-	0	156,000
	Trailers	10,800	-	0	10,800
	Motorcycles	6,300	-	0	6,300
	Rifles	460,000	116,000	25	344,000
	Cannons	16,000	6,600	40	9,400
	o Ammunition	1,530,000	(Storage) 200,000	0 (13)	1,330,000 (1,530,000)

REMARKS: (i) The replacement of men and horses in Eastern USSR is presumed to be allocated in organizations activated as of before the outbreak of war.

(ii) The figures in the "Weapons" column represent the annual losses and replacement capacity after the outbreak of war. Stockpile is allocated for equipment of activated organizations. Replacements after the outbreak of the war are not dependent on this stockpile.

(iii) Items marked "0" constitute a reserve supply of one month(for fuel and ammunition, a reserve supply of one month in border battles).

(iv) Figures marked with paronthesis in the "Self Sufficiency Percentage" and the "Replacements needed from outside Eastern USSR" columns are exclusive of the amount of stockpile.

Table 14

TABLE OF WARTIME YEARLY DEMAND (LOSSES) AND SUPPLY (REPLACEMENTS) IN EASTERN USSR (ON THE BASIS OF APPROXIMATELY 40 RIFLE DIVISIONS)

	Losses	Replacements possible in Eastern USSR	Self-Sufficiency (%)	Replacements needed from outside Eastern USSR
Men	750,000	-	0	750,000
Horses	170,000	-	0	170,000

	Supplies (m t)		Possible Eastern USSR Supply (m t)				Self sufficiency (%)	Supply needed from outside Eastern USSR (m t)
	Military Needs	Civilian Needs	Total	Production	Stock pile	Total		
Principal Provisions and Forage								
o Bread Grain	460,000	1,150,000	1,610,000	860,000	250,000	1,110,000	68 (53)	500,000 (750,000)
Meat	105,000	110,000	215,000	220,000	60,000	282,000 [sic]	130 (103)	-
Fat	21,000	-	21,000	-	-	-	0	21,000
Vegetables	340,000	1,230,000	1,570,000	1,350,000	-	1,350,000	86	-
o Sugar	16,000	24,000	40,000	9,000	10,000	19,000	47 (22)	21,000 (31,000)
o Salt	15,000	189,000	204,000	115,000	8,000	123,000	60 (56)	81,000 (89,000)
o Forage Grain	340,000	300,000	640,000	460,000	320,000	780,000	105 (62)	(180,000)
Hay	370,000	-	370,000	2,000,000	-	2,000,000	540	-
Liquid Fuel	2,460,000	690,000	3,150,000	650,000	1,300,000	1,950,000	61 (20	1,200,000 (2,500,000)

Table 14 (contd)

Weapons						
Airplanes	5,000	4,000	96	96	200	
Tanks	3,500	900	26	26	2,600	
Armored Cars	270	360	133	0	-	
Motor Trucks	108,000	-	0	0	108,000	
Trailers	7,200	-	0	0	7,200	
Motorcycles	4,500	-	0	0	4,500	
Cannons	10,000	6,600	66	0 (23)	3,400	
Ammunition	860,000 mt	200,000 mt (storage)		37	660,000 (860,000) mt	
Rifles	310,000	116,000			194,000	

REMARKS: Same as Table 13.

Table 15

TABLE OF WARTIME YEARLY DEMAND (LOSSES) AND SUPPLY (REPLACEMENTS IN EASTERN USSR (ON THE BASIS OF APPROXIMATELY 30 RIFLE DIVISIONS)

	Losses	Possible Replacement in Eastern USSR	Self Sufficiency (%)	Replacements needed from outside Eastern USSR
Men	600,000	-	0	600,000
Horses	150,000	-	0	150,000

	Supplies (m t)			Possible Eastern USSR Supply (m t)			Self Sufficiency (%)	Supply needed from outside Eastern USSR (m t)	
	Military Needs	Civilian Needs	Total	Production	Stock Pile	Total			
Principal Provisions and Forage									
Bread Grain	370,000	1,150,000	1,520,000	860,000	250,000	1,110,000	73 (55)	410,000	(660,000)
Meat	84,000	110,000	194,000	220,000	60,000	282,000 [sic]	171 (114)	-	
Fat	17,000	-	17,000	-	-	-	0	17,000	
Vegetables	280,000	1,230,000	1,510,000	1,350,000	-	1,350,000	89	-	
o Sugar	13,000	24,000	37,000	9,000	10,000	19,000	51 (24)	18,000	(28,000)
o Salt	12,000	189,000	201,000	115,000	8,000	123,000	61 (57)	78,000	(86,000)
o Forage Grain	280,000	300,000	580,000	460,000	320,000	780,000	134 (79)		(120,000)
Hay	300,000	-	300,000	2,000,000	-	2,000,000	666	-	
o Liquid Fuel	2,000,000	690,000	2,690,000	650,000	1,300,000	1,950,000	72 (24)	740,000	(2,040,000)

Table 15 (contd)

Weapons Ammunition	Airplanes	4,250	4,800	113	-
	Tanks	2,800	900	32	1,900
	Armored Cars	180	360	200	-
	Motor Trucks	84,000	-	0	84,000
	Trailers	5,800	-	0	5,800
	Motorcycles	3,600	-	0	3,600
	Rifles	230,000	116,000	50	114,000
	Cannons	8,000	6,600	82	1,400
	Ammunition	700,000m t	(Storage) 200,000 m t	28	500,000 (700,000)m

REMARKS: Same as Table 13

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Table 16

TABLE OF WARTIME YEARLY DEMAND (LOSSES) AND SUPPLY (REPLACEMENTS) IN EASTERN USSR (ON THE BASIS OF APPROXIMATELY 20 RIFLE DIVISIONS)

	Losses	Possible Replacement in Eastern USSR	Self Sufficiency (%)	Replacements needed from outside Eastern USSR
Men	450,000	140,000	31	310,000
Horses	130,000	100,000	77	30,000

	Supplies (m t)			Possible Eastern USSR Supply (m t)			Self Sufficiency (%)	Supply needed from outside Eastern USSR (m t)	
	Military Needs	Civilian Needs	Total	Production	Stock Pile	Total			
Principal Provisions and Forage									
Bread Grain	290,000	1,150,000	1,440,000	860,000	250,000	1,110,000	77 (59)	330,000	(580,000)
Meat	66,000	110,000	176,000	220,000	60,000	282,000	165 (126)	-	
Fat	13,000	-	13,000	-	-	-	0	13,000	
Vegetables	220,000	1,230,000	1,450,000	1,350,000	-	1,350,000	93	-	
o Sugar	10,000	24,000	34,000	9,000	10,000	19,000	55 (26)	15,000	(25,000)
o Salt	9,000	189,000	198,000	115,000	8,000	123,000	62 (58)	75,000	(83,000)
Forage Grain	230,000	300,000	530,000	460,000	320,000	780,000	147 (86)	-	(70,000)
Hay	260,000	-	260,000	2,000,000	-	2,000,000	764	-	
o Liquid Fuel	1,340,000	690,000	2,030,000	650,000	1,300,000	1,950,000	96 (41)	80,000	(1,380,000)

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Table 16 (contd)

Ammunition	Airplanes	2,000	4,800	240	-
	Tanks	1,400	900	60	500
	Armored Cars	135	360	266	-
	Motor Trucks	54,000	-	0	54,000
	Trailers	3,600	-	0	3,600
	Motorcycles	2,350	-	0	2,350
Weapons	Rifles	153,000	116,000	75	37,000
	Cannons	5,300	6,600	124	-
	o Ammunition	420,000 m t (Storage)	200,000 m t	47	220,000 (420,000) m

REMARKS: Same as Table 13. Estimated replacement capacity of personnel and horses from within Eastern USSR is based on capacity after the outbreak of war.

Section 4. ESTIMATE OF THE POTENTIAL MILITARY STRENGTH THE USSR COULD EMPLOY AGAINST JAPAN BASED ON THE SUPPLY TRANSPORTATION CAPACITY TO EASTERN USSR

The question of how strong a military force the USSR will employ against Japan will depend upon the aggregate national strength and upon the general situation, particularly upon Japan's ability to repel USSR attacks. Although no general statement can be made on this problem, in this estimate the maximum potential military strength which the USSR could employ from the standpoint only of supply (transportation capacity) is examined.

Because of Eastern USSR's lack of self-sufficiency in manpower and materiel, she is compelled to depend largely upon Central and European USSR or the US for supplies. The transportation capacity from these areas will therefore be a very important limiting factor in determining the military potential which the USSR can employ against Japan.

A. Dependence upon the Supply Capacity of the Trans-Siberian Railway (See Appendix 4, "Number of Trains Required to Transport Supplies in Wartime (Replacements) to Eastern USSR by the Trans-Siberian Railway")

1. The annual transportation capacity, exploiting all the lines of the Trans-Siberian Railway to the utmost in wartime, will be approximately 13 million metric tons. The annual (normal) transportation capacity for military goods will be approximately 9,300,000 metric tons (approximately 13,690 trains) after deductions have been made for civilian requirements and for coal.

2. In the event third-class military strength (approximately 60 rifle divisions, 3,000 tanks and 4,000 aircraft) were employed, the number of trains required to transport this annual total of supplies (replacements) at the outbreak of a war with Japan would be approximately 15,867.

NOTE: An unofficial estimate of the number of trains required follows:

Provisions and Forage	approximately 2,243 trains
Fuel	approximately 5,709 trains
Ammunition	approximately 1,551 trains
Other Items	approximately 2,905 trains
Personnel, Horses and Arms	approximately 3,459 trains

The number of trains required to deal with the stores of accumulated munitions is approximately 3,642, leaving approximately 2,225. The amount of supplies stored is estimated at approximately 600,000 metric tons of provisions and forage (supplies not required have been deducted from the total stored in Eastern USSR), 1,300,000 metric tons of liquid fuel and 200,000 metric tons of ammunition.

3. In light of the above statement, if we ignore the accumulated munitions stored in Eastern USSR, approximately 2,180 trains will not be available for transportation, which is the equivalent of 2 months' transportation capacity of the Trans-Siberian Railway. On the other hand, if we do take the above into consideration, approximately 1,465 trains will become surplus, the equivalent of 40 days' transportation capacity on the Trans-Siberian Railway.

NOTES: (i) Ignoring the accumulated stores:

15,867 trains minus 13,690 trains equals 2,177 trains
2,177 trains divided by 37.3 trains equals about 58 days

(ii) Taking the accumulated stores into consideration:

13,690 trains minus 12,225 trains equals 1,465 trains
1,465 trains divided by 37.5 trains equals about 39 days

Therefore, even in the former case, if the transportation of which 2,177 trains are capable is carried out prior to the outbreak of war (possible, if the mobilization period is extended by about 2 months), it will be possible to utilize third-class military strength. If this is not carried out, approximately 13 percent of the third-class military strength will have to be deducted, the equivalent of eight rifle divisions.

In the latter case, it will be possible to increase the military strength by 9 percent of third-class military strength, the equivalent of five rifle divisions.

4. Theoretically, therefore, the maximum potential military strength which the USSR can employ, depending upon the Trans-Siberian Railway for transportation, is from 52 to 65 rifle divisions. In fact, there will be little error, if the estimate is set at 60 rifle divisions, the equivalent of third-class military strength.

B. Dependence Upon the Supply Capacity of Maritime Transportation in Eastern USSR

The annual maximum supply capacity of the sea and inland-waterways transportation facilities of Eastern USSR is approximately 2,500,000 metric tons (approximately 2 million metric tons by sea and 500,000 metric tons by inland waterways), and if the daily supply rate for one rifle division is taken as 350 metric tons, which is roughly 130,000 metric tons annually the figure of 2,500,000 metric tons is sufficient for 20 rifle divisions (approximately 15 divisions by sea and 5 by inland waterways).

NOTE: For the daily supply rate for one rifle division, see Appendix 3, "Daily Supply Rate for Red Army in Eastern USSR by the Trans-Siberian Railway."

C. Dependence Upon Air Transportation Capacity

The aerial transportation capacity using the US - USSR Northern Air Route and other air routes is approximately 100,000-260,000 metric tons annually. This is sufficient for one to two rifle divisions according to the figures given above for the annual military requirements of one rifle division (approximately 130,000 metric tons).

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